INDUSTRIAL MEDICINE

Industrial Health, Occupational Medicine and Traumatic Surgery

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The Army Industrial Medical Program
— At the San Francisco Port of Embarkation: The Personal Side —

Maintaining Labor Standards in Wartime
— And Women's Peacetime Role —

Face to Face
— What of the Interviewer? —

Industrial Health Programs
— State and Local —

Sick Leave
— Factors Contributing to Its Excessive Use —

Rehabilitation of the Blind
— Timken's Electronic Sound Device for Inspectors —

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Health Education in Industry
— Opportunities and Responsibilities —

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COMING

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by *Bennett R. Parker, M.D., F.A.C.S.*

COLONEL JEAN S. FELTON'S "The Personal Side of the Army Industrial Program at the San Francisco Port of Embarkation" (page 629) is, in a manner of speaking, the cart before the horse. The COLONEL'S complete description of the Army industrial medical program at this port was intended to appear first, with the details of the personal side following. The very completeness of the larger article, however, precluded its being made ready quickly enough, and so we present the personal side first, with the conviction that it well deserves to appear by itself because it emphasizes a phase of industrial medicine which, although a great deal has been written about it, has never received the emphasis it deserves. This may be expressed in COLONEL FELTON'S own words: "Few medical groups have at any time interpreted actively the principles of commercial success stories into their operation, such as the common and perhaps hackneyed policies of 'courtesy,' 'consideration for others,' 'dependability,' or 'friendliness'. . . The frozen-faced office nurse and sharp-tongued technician are prototypes well known as long standing features in medical clinics". . . . DR. MCCORD'S "Request for Serum Specimen" (page 631) is made in connection with the development of a new laboratory procedure in the diagnosis of carbon tetrachloride poisoning. . . . ALICE RICE COOK'S "Face to Face —What of the Interviewer?" (page 634) fits into the picture drawn by COLONEL FELTON in its emphasis on decent personal relations. Thus, "As two servicemen sat down near me, I heard them say: 'The same old run-around. Old Sour Puss certainly looks familiar.' Hostility and resentment were already being fostered by brusqueness and lack of understanding." . . . DR. LONG, in his "State and Local Industrial Health Problems" (page

—Continued on page 6.

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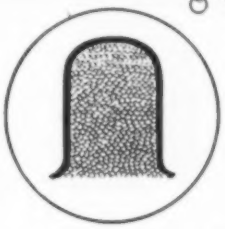

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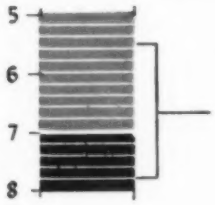

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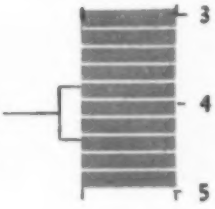

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RESEARCH IN THE SERVICE OF MEDICINE

—*Continued from page 3.*

636) comments eloquently and earnestly on the "enormous and radical change in the thinking of physicians" disclosed in LIEUTENANT COLONEL LUETH'S analysis of the questionnaire survey of Army medical officers recently appearing in *J.A.M.A.* And he translates the solution of the problem of adequate medical service for the smaller companies into terms which the small employers, who "are only just *beginning* to provide their workers with the health services that have long been standard, accepted practice in large industries," can comprehend. And then he concludes, "The increasing interest of industrialists, great and small, the awakened participation of organized labor, and the necessity to intelligently assay and place the returning veteran will require our best skills as physician advisers to industry." . . . DR. WATROUS and MARGARET MCCAUGHEY, in their "Occupational Exposure to Arsenic" (page 639), make a notable and important contribution to the scientific knowledge of this subject. . . . DR. LEON SCHWARTZ, in his "Factors Contributing to the Excessive Use of Sick Leave" (page 646), presents a comparative study of important socio-economic and medical factors in the lives of 100 female office workers who had records of excessive sick leave during a six-month period, and of 100 female office workers who took no sick leave during the same period. The differences between the two groups are carefully detailed and interestingly presented. . . . DR. FEIMAN, in "Rehabilitation of the Blind" (page 649), describes the means whereby Timken Roller Bearing Company's Research Department has made it possible for the blind "to see and complete inspection work within one twenty-five millionth of an inch by means of their ears." This apparatus is available to any industry that is willing to employ blind people for this kind of work, and it can be had without any rights or royalties, but on the condition that it be used only by blind employees. Inquiries may be addressed to DR. EDWARD M. FEIMAN, Medical Director, The Timken Roller Bearing Company, Canton Ohio. . . . DR. DOWNING—"The Dermatologist and the Industrial Accident Board" (page 655)—submits such an aggregate of authoritative information and wisdom from experience as is rarely given in a single article. It is one of those contributions for which we can recommend that it not only be read but that it also be studied, as, in the words of Dr. Pilgrim, "much recompense will derive therefrom." . . . DR. SPOLYAR'S "Health Education in Industry" (page 687) highlights the very important, but too often unappreciated, fact that "health education of the worker cannot be obtained by one lecture, one pamphlet, or a few posters". . . JOHN A. RYLE'S "Social Medicine as a Discipline" (page 38) emphasizes that the term, "social medicine" does not mean in England what it means here. Thus he says, "Education, research and practice are all of as much interest to it as they are to clinical medicine, from which (like the medical sciences) social medicine is a natural offspring. It is concerned with the man-environment relationship using environment in its fullest implication to include both the material and the personal environment. Its interest is with health quite as much as with disease."

TO THE EDITOR:

In the July issue of INDUSTRIAL MEDICINE, in the article, "Clinical Trial of Vitamin B_1 and Vitamin C in the Prevention of Heat Diseases," by SHOUDY and COLLINS, page 574, the composition of Tablet No. 1 should read "Ascorbic Acid 10. mg." and not ".10 mg." The authors regret this typographical error. —LOYAL A. SHOUDY, M.D.

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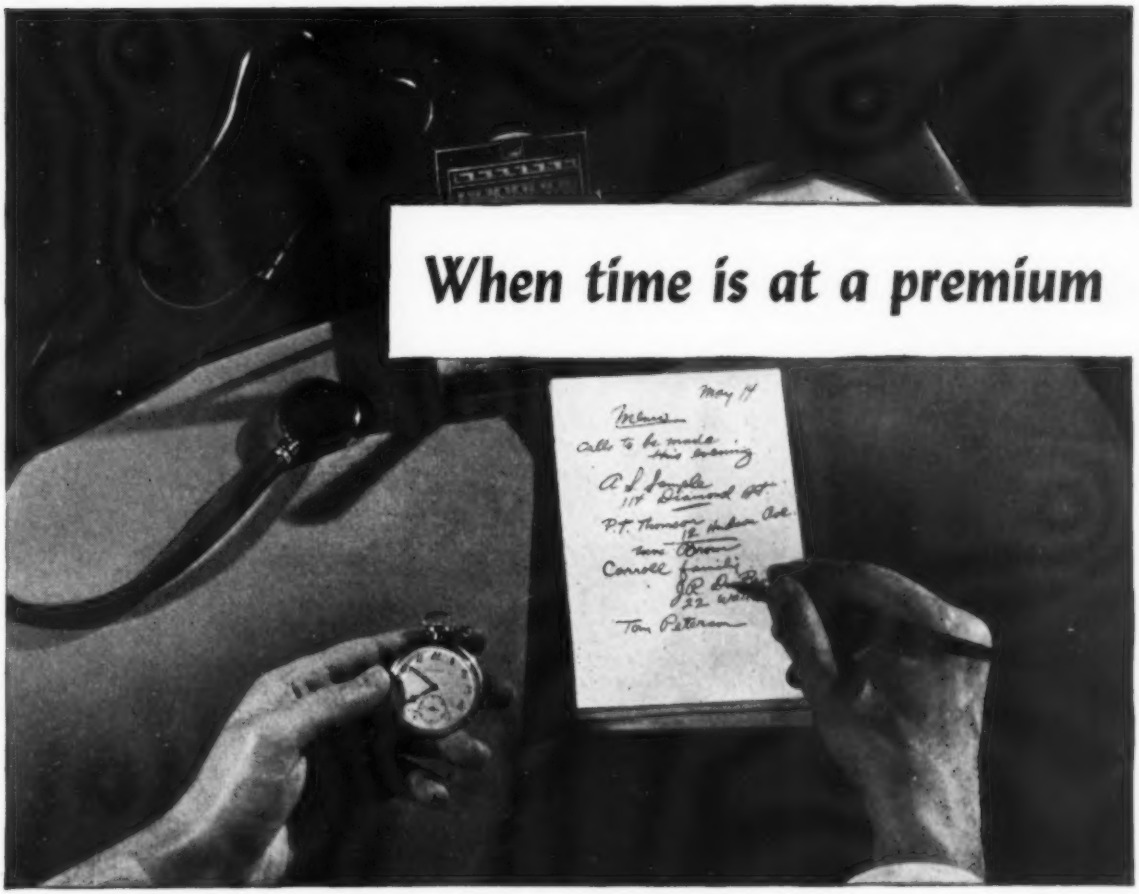

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PERSONAL

DR. JAMES P. PARLANTE, Shadyside Ohio, has been appointed medical director of the Powhatan Mining Company, Powhatan Point, Ohio, to succeed DR. JAMES M. SKINNER, JR., effective July 1. DR. SKINNER, who held the position for the past 14 years, resigned to enter private practice in New Martinsville, West Virginia.

DR. W. M. GAFAFER, Chief of the Statistical Unit, Industrial Hygiene Division of the U. S. Public Health Service, has been appointed a member of the Advisory Editorial Board of the newly-established *Journal of Gerontology*. All aspects of the problems of aging and the proper care of the aged will be given attention in this periodical. The *Journal* will be issued quarterly, the first number to appear during the first quarter of 1946. The publisher is Charles C. Thomas, Springfield, Illinois. Presently contemplated sections of the *Journal* include: (1) Reports of original investigations; (2) Reviews; (3) "Browsing through the Ages," a section devoted to a scholarly treatment of some topic from the field of art or literature relating to aging and the aged; (4) Editorial comment; (5) Abstracts of the current periodical literature; and (6) Book reviews. There also will be a supplement of 12 to 20 pages each quarter, paged and bound separately, containing a non-technical abstract of each *Journal* article.

—*Industrial Hygiene News Letter*, July, 1945.

Doctor Strikes

DR. ELIZABETH HAYES, who caused a furor by resigning as company physician for the Shawmut Mining company because of "intolerable" sanitary conditions, said today she wants to leave "as soon as I can." Her rugs already rolled up, the best dishes crated, and the walls denuded of pictures and hangings, the 33 year old physician declared, "There is not one factor here that constitutes a community. There is no good water supply, no sewage, no passable streets, street lights, presentable homes, or local government. I want to live under decent conditions or get out." Meanwhile 350 miners who walked out three weeks ago because they refused to work without a company doctor prepared to hold out as long as necessary. DR. HAYES resigned last April, effective July 15, when the miners quit. William Agustine, father of four sons and member of a special miners' committee, asserted: "We'll hold out as long as we have to—until the com-

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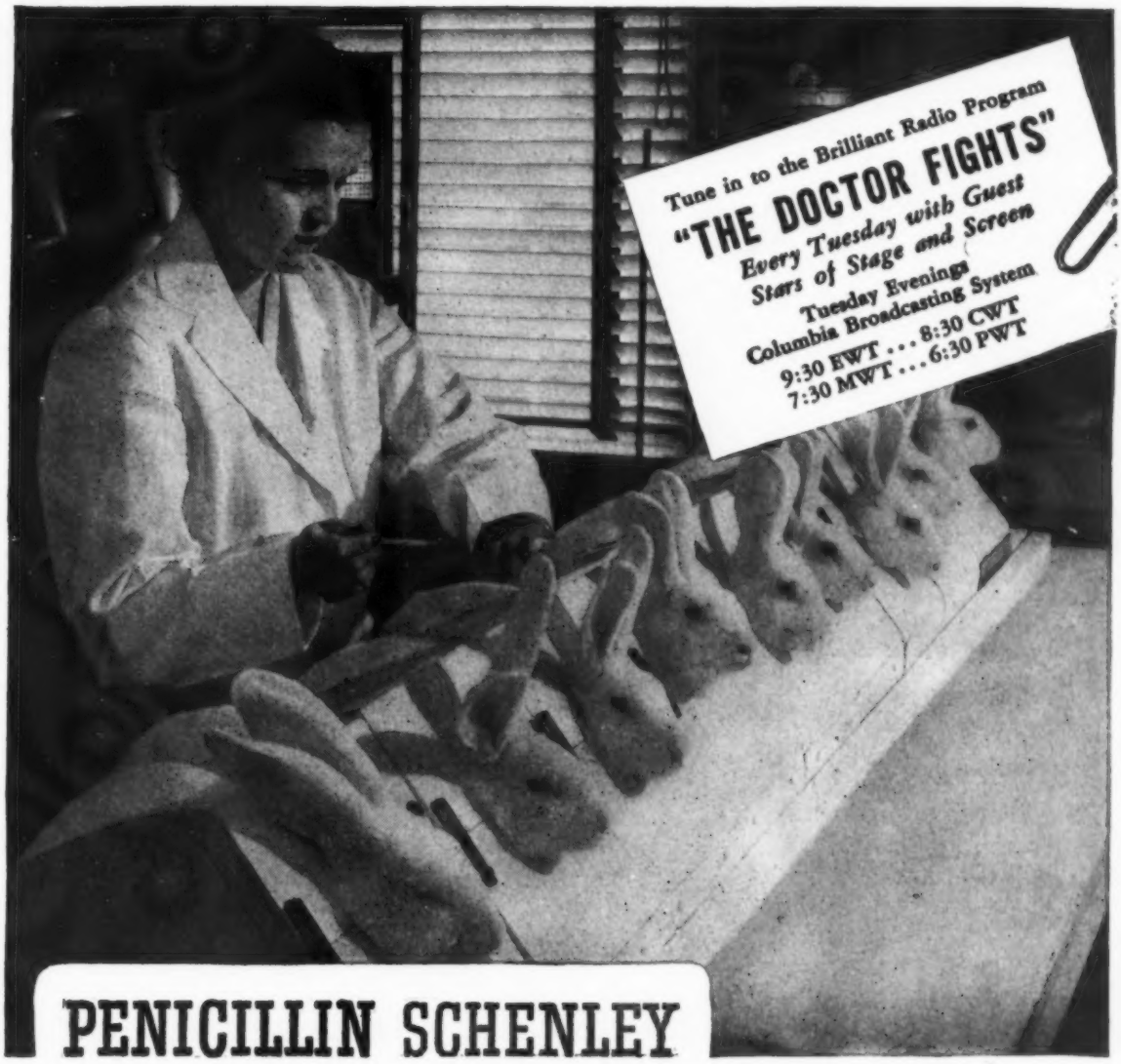
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pany either fixes sanitary conditions so we can get a doctor or gives us a release so we can leave." Husky Norman Winkler added, "We'll wait the 60 days and then move out if they don't fix things." In Harrisburg, state health authorities announced the company had agreed to clean up outdoor toilets, contaminated ground, and leaking wells.

—AP, August 1, from Foree, Pennsylvania, *Chicago Tribune*, August 2, 1945.

Physicians' Union

FORTY physicians and surgeons on the staff of the Southern Pacific Railroad company hospital have formed a union "to provide a collective bargaining agency under the provisions of the Wagner act," it was disclosed today. "The purpose is to represent the doctors in matters of wages and hours, if, as, and when necessary," a spokesman of the organization said. The union will not be affiliated with any other labor group, he added. It is the result of three years' consideration by the hospital medical staff.

—AP, August 1, from San Francisco, in *Chicago Tribune*, August 2, 1945.

GENERAL

THE AMBULATORY FRACTURE ASSOCIATION has moved its office to 120 S. La Salle Street, Room 509.

OCCUPATIONAL diseases become compensable for the first time in the history of the state, under a law passed by the general assembly of Colorado recently. The act goes into effect January 1, 1946. Coverage is limited to diseases listed in a schedule which includes silicosis and asbestosis. The Colorado division of industrial hygiene cooperated in drafting the bill. Colorado is the twenty-ninth state to adopt a law compensating for industrial disease.

—*J. A. M. A.*, August 4, 1945.

Georgia AIHA Section

INDUSTRIAL hygienists and industrial physicians and engineers of the State of Georgia met June 21 in Atlanta, and formed a Georgia Section of the AMERICAN INDUSTRIAL HYGIENE ASSOCIATION. Main speaker of the meeting was ENGINEER (R) T. R. THOMAS of the Industrial Hygiene Division, U. S. Public Health Service, who talked about the place of industrial hygiene in the national economy, and the necessity for organization of industrial health workers. C. G. BENDER, of the Bell Aircraft Corporation, Marietta plant, presided. Officers of the new organization are N. V. HENDRICKS, of the Industrial Hygiene Service, Georgia Department of Public Health, president; DR. R. L. BROWN, of Bell Aircraft Corporation, vice-president; C. G. BENDER, Bell Aircraft Corporation, secretary-treasurer. The first meeting resulted in a membership of approximately 50.

—*Industrial Hygiene News Letter*, July, 1945.

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[1]Cornbleet, T., Kirch, E. R., and Bergeim, O., Jl. A. M. A. 122: 426, June 12, 1943

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THE illness of a worker engaged in spraying a liquid insecticide in a feed and grain mill was investigated recently by the Industrial Hygiene Service of the Tennessee Department of Public Health. When samples of the sprays used were analyzed in the Industrial Hygiene Service Laboratory it was found that one contained 35% carbon tetrachloride and 60% ethylene dichloride. The label on the container of this material gave no indication of its toxic properties nor instructions for its use. It is thought that the manufacturer had changed the composition of this spray but continued to market it under the same trade name and label.

—*Industrial Hygiene News Letter*, July, 1945.

Cadmium Poisoning

THE sudden illness of five persons after drinking strawberry soda at a soda fountain June 26 has been traced to the use of a cadmium-plated syrup pump, according to the New York City Department of Health, July 12. All of the patients recovered. The New York City sanitary code forbids the use of cadmium on food utensils, refrigerator trays and similar items. Even a minute quantity of cadmium dissolved by the acid of fruit juice or syrup is capable of causing violent vomiting and severe distress. The investigation of the illness of the five persons, conducted by the health department, disclosed that all of the persons had become ill after drinking a strawberry soda made from syrup and carbonated water. No other foods had been eaten in common by any of the victims. The health department seized all pumps in the fountain for chemical examination, and it was found that the pump used for the strawberry syrup was cadmium-plated. Syrup from the pump was also found to contain traces of the dangerous metal. Further investigation disclosed that the entire fountain unit containing the pump had not been used for eight years and had been placed in operation by the new owner of the fountain one week prior to the poisonings.

—*J.A.M.A.*, July 28, 1945.

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DISTINGUISHED dermatologists who comprise the Consulting Staff of the Dermatoses Section, Industrial Hygiene Division of the U. S. Public Health Service, met in Washington June 25 and 26 for their

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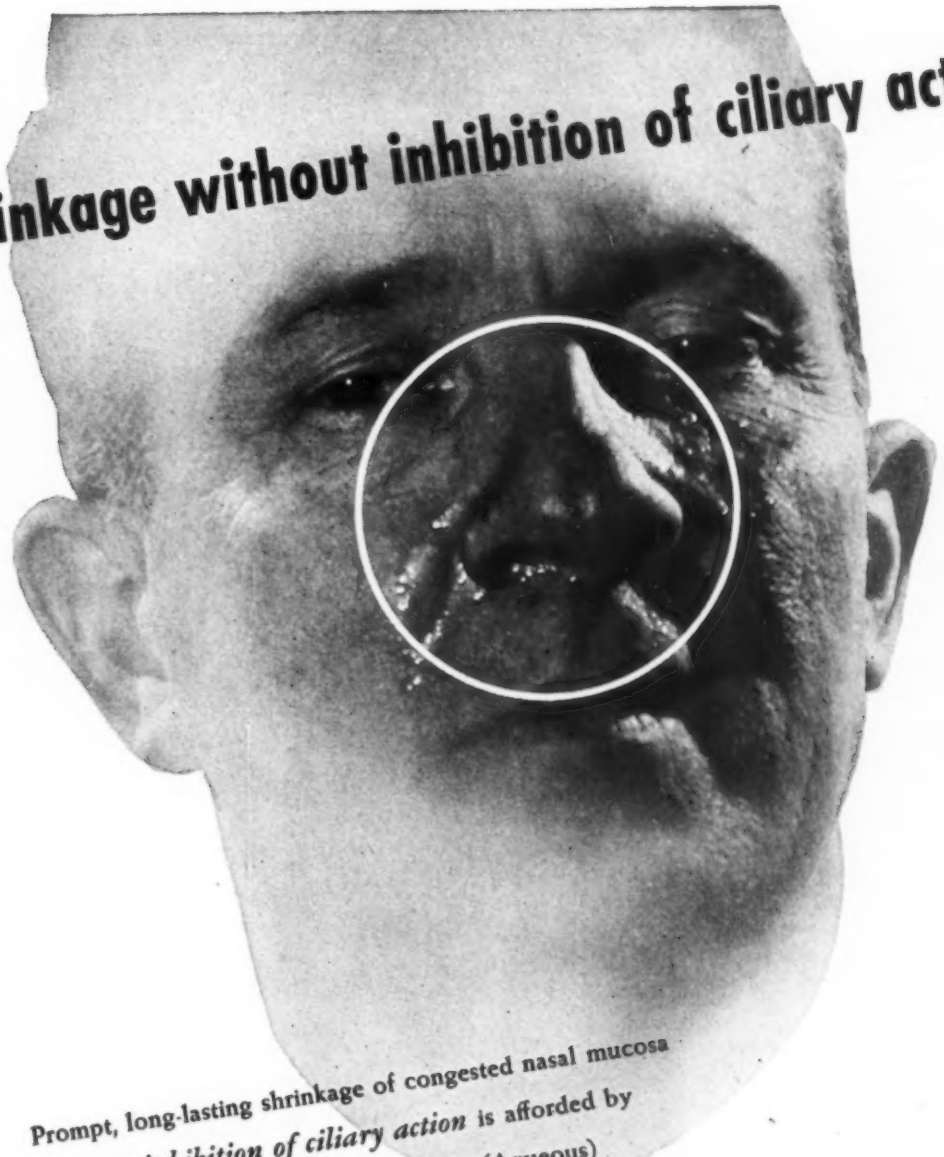

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annual review of the work of the Section, and to advise on dermatologic problems and assist in planning future activities. Present were DR. PAUL A. O'LEARY, of the Mayo Clinic, Rochester, Minnesota, chairman of the Consulting Staff; DR. S. WILLIAM BECKER, of Chicago; DR. SAMUEL M. PECK, of New York City; and DR. HARRY J. TEMPLETON, of Berkeley, California. Work reviewed included studies which have been made during the year on synthetic rubbers, resins, anti-mildew tropicalization compounds, atabrine dermatitis, anhydrous hydrofluoric acid burns, and biochemical investigations including testing of the efficacy of protective ointments, poison ivy studies, oxidation of hydro-urushiol with tyrosinase, and oxidation of Dopa with tyrosine. The Council

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TO provide an organization, not for pecuniary profit, in which all agencies and societies, both medical and lay, concerned with the problems of industrial health can hold membership and can meet together in conference for the study, discussion and careful consideration of all industrial health problems and procedure; to engage in scientific research to determine the cause, nature, prevention and cure of diseases and injuries of occupations; to assist in establishing and supervising industrial health clinics to serve small industries; to establish and maintain hospitals which will furnish facilities for the care, treatment and study of occupational injuries and diseases; to make surveys of industrial medical services and recommendations for their improvement; to solicit, receive and administer funds for any purpose that will advance and/or improve industrial health; to establish undergraduate and/or post-graduate courses in industrial medicine and surgery and/or to cooperate with medical schools and industries in maintaining such courses; and to use all those means, which from time to time, may seem wise, for the advancement of industrial health.

even the crow carried a knapsack . . .

There is an old proverb that describes a certain stretch of land so barren that even a crow flying across it must carry his lunch in a knapsack or perish of starvation.

Yet with all respect to the old proverb, even the most barren wasteland—utterly fallow and devoid of fertility—is rich in an important therapeutic crop, Dubos' soil bacillus (Bacillus brevis) from which is derived a powerful antibiotic agent, TYROTHRICIN CONCENTRATE, Sharp & Dohme. This potent bactericide actively combats a host of deadly infections and—even when applied in high dilution—attacks such gram-positive organisms as pneumococci, streptococci, diphtheria bacilli, staphylococci, certain anaerobic bacilli and others.

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members visited Hagerstown, Maryland, to witness a demonstration of methods devised by the Dermatoses Section for control of an epidemic of ringworm of the scalp among school children.

—*Industrial Hygiene News Letter*, July, 1945.

In-Plant Feeding

ONE hundred of 101 industrial companies indicated in a recent survey their intention to continue operation of in-plant cafeterias and other feeding facilities in the postwar years. More than seven million manufacturing workers eat at in-plant feeding facilities today, compared with approximately two million before the war; the current trend is toward the permanent type of facility. About half of the factories which provide means for feeding their workers have cafeterias today. This is a decided increase over a year ago. Most industrial feeding programs are instituted by management.

Unionized M.D.'s

ONE hundred and twenty-five American physicians, all carrying union cards, would make a startling picture. Yet it is one that any photographer could take. He would simply click his shutter at the members of the Physicians and Dentists Committee, Local 111, of the State, County and Municipal Workers of America—a CIO affiliate. These men, all residents of Greater New York, are employed by the city health department. They work on a part-time basis at schools, at baby stations, and in tuberculosis, venereal disease, eye, heart, and other services. Associated with them in the union are 25 dentists. The physicians give three hours a day, five days a week to their health department patients. For this they receive $6 per three-hour day, or $2 an hour (U. S. physicians in 1943 averaged, net, about 25% more than this). Although conservative members of organized medicine in New York have frowned upon their confreres' association with the CIO, the union men have never been turned out of their county or other professional societies.

—*Medical Economics*, July, 1945.

New Vitamin Researches

LATEST was that made at the Massachusetts Institute of Technology. Foods of known vitamin content were tested on the vine and in the field, then as they reached the market, and again as they were cooked and ready to serve. It was demonstrated, as had been previously proved, that the percentage loss in vitamins from the fresh product to the ready-to-serve was substantial.

—*Medical Times*, July, 1945.

Industrial Health Law

AUTHORITY was granted to the State Department of Health of New Hampshire to engage in industrial hygiene by a law signed by Governor Charles M. Dale May 15. Rules and regulations relating to industrial health are authorized to be made by the health department and enforced by the state department of labor. Under the new act the health department may investigate all mines, quarries, foundries and industrial establishments employing five or more persons in manufacturing or processing of goods, in order to determine what health hazards may exist from noxious gases, fumes, dusts or other toxic materials. A penalty clause provides for fining employers who refuse to comply with rules and regulations formulated under the act, which took effect on its passage.

—*J.A.M.A.*, July 21, 1945.

Psychiatry: Rehabilitation

IT HAS been repeatedly stressed by industry as well as by the military services that a man must be fit for all duties or for none at all, and this all or none theory is the psychologic barrier which the returning veteran has to hurdle." It is to the credit of psychiatry and industry that for some years the larger industries, at least, have recognized the value of including psychiatrists or psychiatrically trained personnel directors on their staffs: Employment and employee-employer problems and the personality of the individual worker, as contrasted with the impersonal, exclusively monetary profit motive, had been given consideration and attention

The above ten Machlett techniques reflect only a part of one side of this organization — that of technical capability.

It takes much more than even the highest techniques to make a business great. There is also required a thorough knowledge of customers' requirements, and that conscientious, painstaking, continuing meeting of them called "service."

Just as there is the most intimate relationship between an electron tube and the equipment with which it is connected, so there is a close and constant contact with our customers. With them we are never in competition, and thus we may be, and often are, called upon to do design and development work, to live with tube and equipment problems, and cooperate in solving them. We often follow through all the way to the ultimate users, to make certain of their satisfaction and see that conditions of use are such as to assure optimum results and economy. It is a long-established Machlett practice not merely to accept but to seek out every opportunity to serve. Thus, Machlett customers obtain much more than the best possible tubes.

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A constituent of human bile, it is the fraction chiefly concerned with fat emulsification, promoting the digestion and absorption of ingested food fats and the utilization of the fat-soluble vitamins.

In the dosage required, Degalol exerts little or no choleretic influence. Thus it proves superior to ordinary bile salts which not only are less potent in their influence on fat emulsification, but—since they are required in higher dosage—produce side actions which are frequently undesirable. The powerful choleretic influence of the bile salts, for instance, is definitely to be avoided in catarrhal jaundice, though fat digestion and vitamin absorption are to be enhanced.

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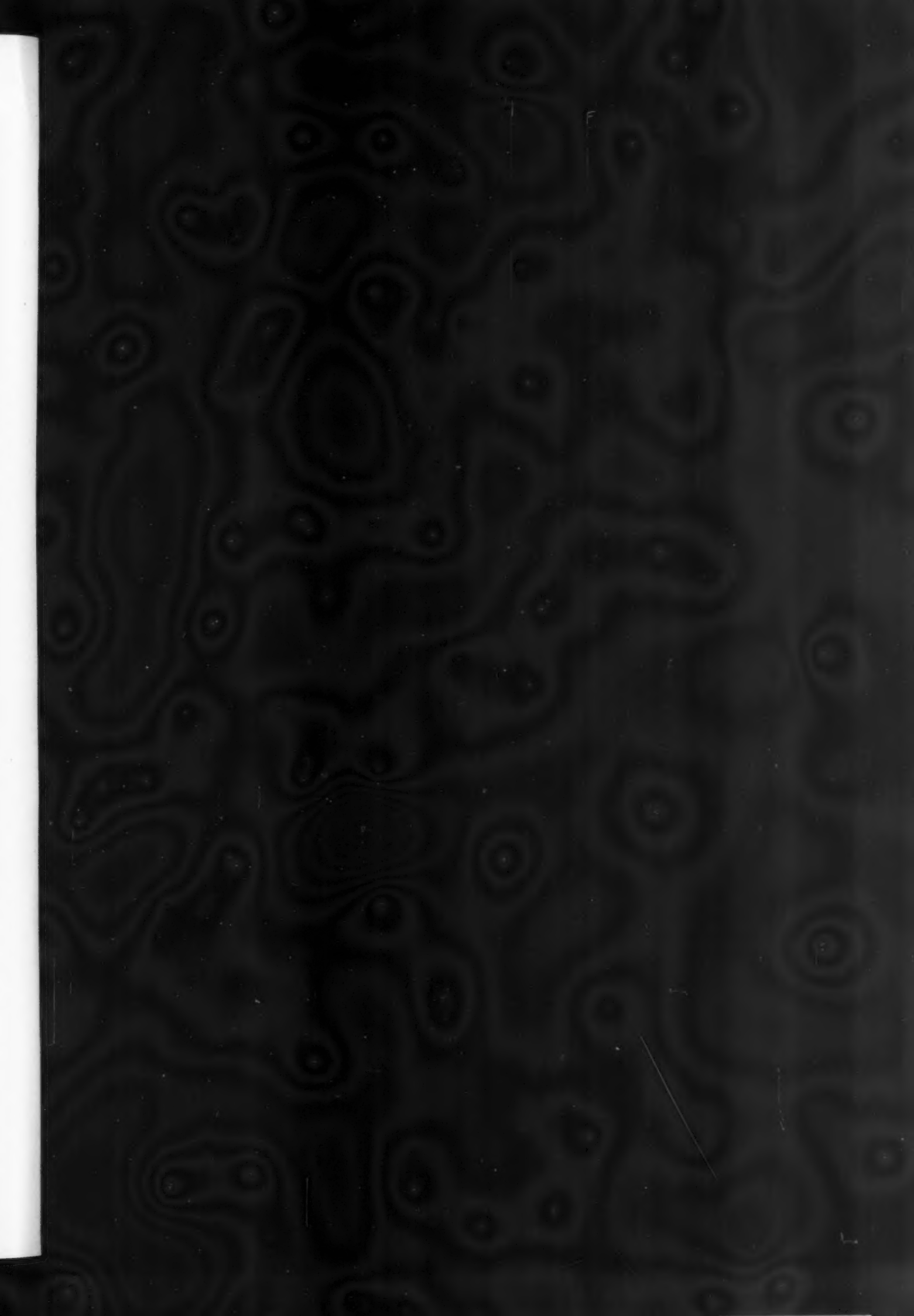
from the psychiatric or mental hygiene point of view long before the industrial rehabilitation difficulties of World War II arose. The principal hazard in the present situation is that industrialists may be influenced by the popular articles of journalism to believe that it is well to be wary of the man who has been discharged for neuropsychiatric disability. How a division of the General Motors Corporation is meeting the issue of rehabilitation in industry is well delineated by Smith (*J. Indiana M.A.*) He wrote in April, 1944, that the Delco-Remy Division had been keeping in touch constantly with about 5000 employees in military service. These men were sent letters, and gifts on various occasions, as at Christmas and Easter, and were told that they were wanted back when the war was over. Hundreds of letters had been received each week from the former employees. "Every letter that asks a question or indicates that a reply is desired is answered." The policy of the Delco-Remy Division is as follows: Veterans will be given every possible assistance, sympathy and consideration in helping them to get back into the normal swing of civilian life. However, it is not our intention to oversympathize, coddle or lead them by the hand. In our opinion such treatment will simply lead to untold trouble in the future, as it develops in the individual the feeling that he is different from other people, entitled to special considerations, and that the world owes him a living. This policy includes the decision not to give veterans preferential treatment. Although the plan of setting them apart from the general group of employees was considered, it was decided "that the veteran should, to all outward appearances, be treated as all other incoming employees." Smith states that a great majority of over 100 veterans questioned on this plan preferred to be considered as no different from their fellows." This is the particular desire of that group of veterans who have been discharged from military service because of some slight mental or physical impairment which made them unfit for life in the service." At the time Smith's report was written the Delco-Remy Division had employed 475 veterans. It was found that these men fell into two general classes. The first comprised battle-incurred disability discharges and men discharged as unfit for service because of some slight mental or physical disability. The rehabilitation of this class had not proved much of a problem and it was thought it would not in the future. The second class was made up of men who had been discharged because they were temperamentally unsuited for military service. Smith states, "This is the group who are emotionally unstable, and in the vast majority of these cases these characteristics were not acquired in the service but are inherent."

—From "Psychiatry: Rehabilitation," by VERNON P. WILLIAMS, M.D., in *New England J. Med.*, July 19, 1945.

Chicago Tribune Policies

WE OPERATE four hospitals and five dispensaries in the forests and at the mills. In a big city the company hospital is neither necessary nor desirable, but I believe that companies should have medical advice available for their employees if the latter wish to avail themselves of it. The longer a man has been in good health the less he is equipped to find a competent doctor. I believe in keeping sick employees on the payroll. It is bad enough and expensive enough to be sick without losing one's earning power. I believe in pensions. I do not yield one inch in my belief in industry and thrift and the industrious and thrifty will always be better off than the lazy and extravagant, but the vicissitudes of this life are so great and so many that the individual cannot guarantee his old age, and the company should provide for it if it can. If it cannot, it cannot, but if it is able to, I believe it is the nearest thing to assuring that it will always be able to. I believe that it should be made possible for employees to acquire stock in a company so that they can share in the profits and also in the anxieties. Two hundred fifty-two of our families now own over four million dollars of our stock, and when I say 252 I am not including Capt. Patterson and myself.

—COL. ROBERT R. MCCORMICK, Editor and Publisher, *Chicago Tribune.*



clearly defined

THE MALE CLIMACTERIC SYNDROME

is now recognized as a clearly defined entity, and may be suspected to be present when middle-aged men in the prime of life complain of tiredness, nervousness, insomnia, vague pains and impotence.

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Therapy with *Oreton*, testosterone propionate, frequently alleviates these manifestations, if they are due to insufficient hormone, and restores male climacteric patients to former physical and mental vigor.

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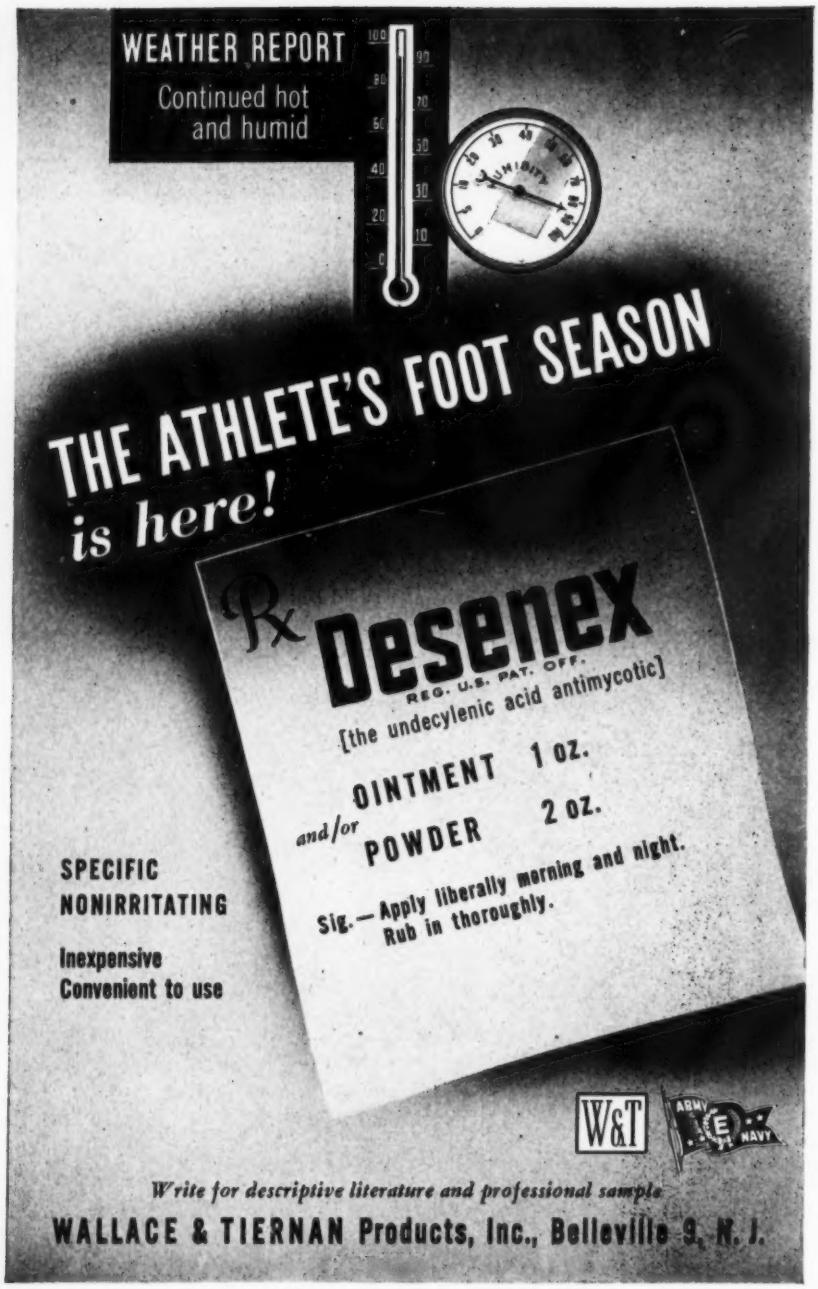


Ohio Health Insurance

A NEW approach to medical insurance has been taken by the Ohio State Medical Association with the forming of Ohio Medical Indemnity, Inc., which will enroll subscribers in a plan to insure them against the costs of medical care. Operated as an extension of the Blue Cross hospital care system, the new plan will make use of the sales, promotion, clerical and administrative facilities of that system. Cash benefits will be paid to subscribers and enrolled family members for some 100 different surgical procedures, for fractures, dislocations and obstetrics, ranging from $10 to $150 in amount. Nothing in the plan will interfere with the physician-patient relationship, or the value of the physicians' services. Chartered as a stock company under Ohio insurance laws, the firm will begin with $100,000 assets. —*Victor News*, June, 1945.

Health Education

ONE very effective answer to the alleged need for medical care is health education, particularly in younger life. The State of Oregon recently passed a progressive bill to further health and physical education. Known as House Bill No. 53, it is entitled, "An act to provide for programs of health instruction and physical education in all elementary and high schools of the state, to provide for the planning, supervision, direction and evaluation of such programs by the superintendent of public instruction, and appropriating money therefor. . . ." The purpose of the law is to promote, develop and maintain among pupils at all levels "optimum physical growth, health and physical fitness." *J.A.M.A.*, July 14, commenting editorially, says: "The Oregon act is said to be the first legislation of its type in any state. Legislation, or even the effective functioning of the program under such legislation as this, will not necessarily eliminate all physical unfitness and all sources of poor health. Much can undoubtedly be accomplished, but not in a year or in two years. Measurable results may take 10 years. In the meantime, those who work in the program and those who appropriate money for its support must not become discouraged. Even with the best program functioning at the highest possible efficiency some conditions are not remediable in the present state of medical knowledge. The time is ripe for great progress toward improved health and physical fitness."

Army Industrial Medicine Guide

THE Preventive Medicine Service, Office of the Surgeon General, announces the publication of a new manual prepared by the Occupational Health Division designed to serve as a guide in standardizing the medical program of dispensaries in Army industrial installations. It is entitled, "Operating Procedures for Industrial Dispensaries."

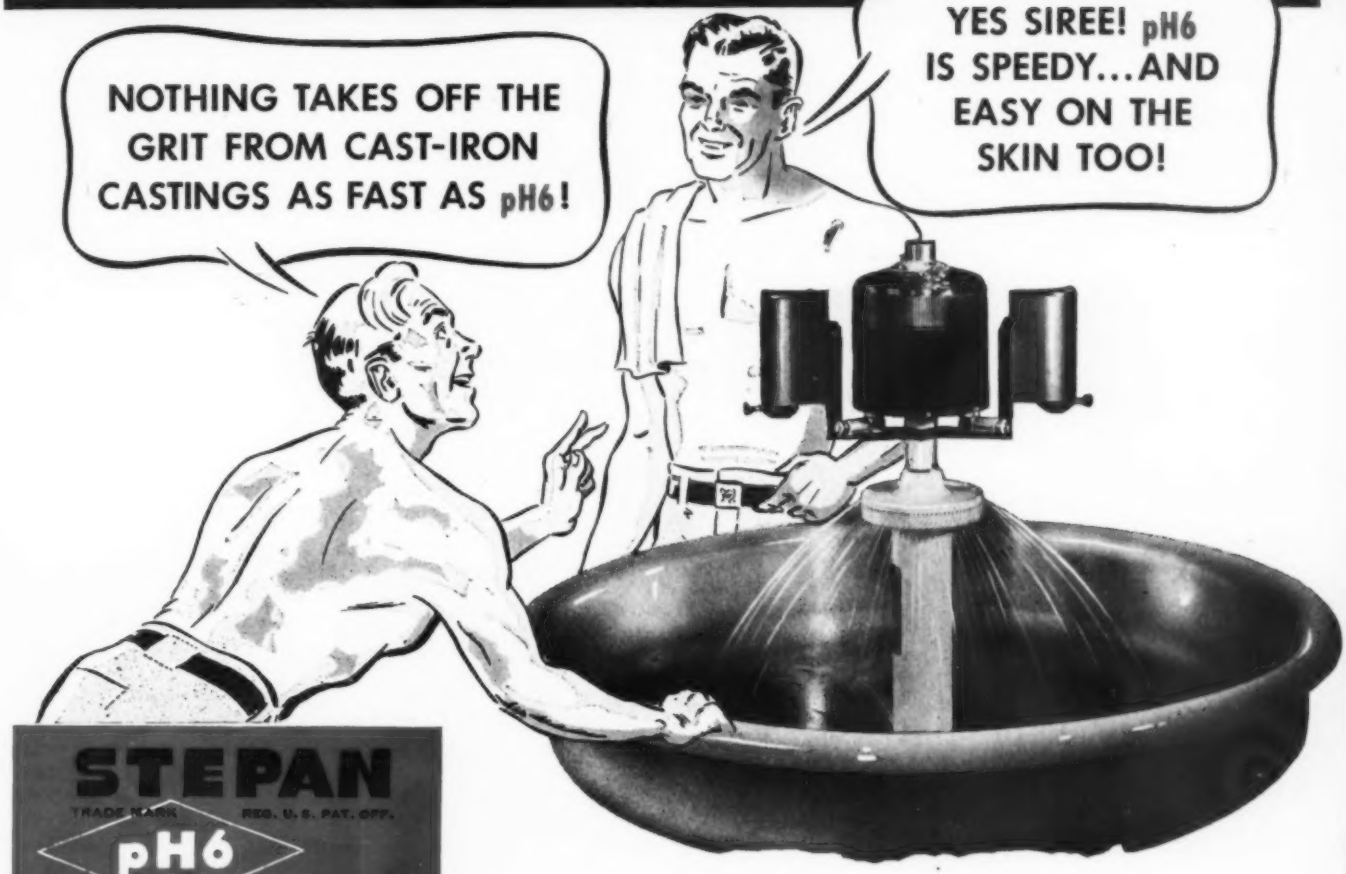
Graphite Workers

INDUSTRIAL HYGIENE DIGEST, July, 1945, carries *J.I.H. & T.* abstract of "Observations on Pulmonary Diseases in Graphite Workers" by L. DUNNER in *Brit. J. Radiol.*, February, 1945, as follows: "It is the purpose of this paper to draw attention to an occupational disease of the lungs, due to inhalation of pure graphite, which, so far as can be ascertained, has not hitherto been described in this country. Observations of lung changes of the pneumoconiosis type were made in five individuals who had been exposed to pure graphite dust from 17 to 34 years each. None had ever held another 'dusty' job. Only three of the five had any clinical symptoms and all these were slight: cough, sputum and dyspnea. In none could tubercle bacilli be found and only one had x-ray evidence suggesting healed tuberculosis. The five roentgenograms are reproduced, their appearance being similar to that commonly found in silicosis and other pneumoconioses."

Shipyard TB Program

UNDER the joint sponsorship of the New York City Department of Health and the New York State Department of Labor—utilizing new equipment provided by the U. S. Public Health Service—a new program to explore industrial hazards and control tuberculosis has gone into action at McNulty Shipyards in Brooklyn. In the metropolitan area, DR. H. R. EDWARDS (New York City Department of Health) and DR. LEONARD GREENBURG (New York State Department of Labor) are initiating the new program. It is expected that this project will be developed into a regular service in New York industries after the war.

TOUGH WASH-UP JOBS MADE EASY ...YET pH6 IS EASY ON THE SKIN



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THE MIND OF THE INJURED MAN

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By Charles J. Drueck, M.D., F.A.C.S.
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COMMENT and OPINION

IT HAS been my experience in talking before all kinds of audiences that there is an appalling lack of understanding of our form of government, its advantages, its strength, and its weakness. Unless this ignorance is substantially wiped out, and soon, disaster will result. Therefore, I am convinced that the greatest need of our nation today is to make its citizens economically literate so that they will not follow false prophets.

—HENRY R. JOHNSTON, "Don't Overlook America's Internal Affairs," *American Druggist*, July, 1945.

Psychoneurotic Hazards

POSSIBLE problems of psychoneurosis in the employment of ex-servicemen as drivers of trucks and buses were considered in a meeting in Washington June 26, called by the Interstate Commerce Commission and attended by representatives of the Army, Navy, Veterans' Bureau, National Selective Service System, Civil Service Commission, U. S. Public Health Service, Interstate Commerce Commission, and a number of operators' associations. Presiding was Medical Director J. G. TOWNSEND, Chief of the Industrial Hygiene Division, U. S. Public Health Service. Operators were informed that medical records of war veterans constitute privileged communications and may not be released for employment purposes. The hazard in the employment of veterans was held by the attending psychiatrists to be no greater than in the employment for this purpose of men with no military experience. It was recommended that medical examiners of the companies include neuropsychiatric conditions as part of the general physical examination of all prospective employees.

—*Industrial Hygiene News Letter*, July, 1945.

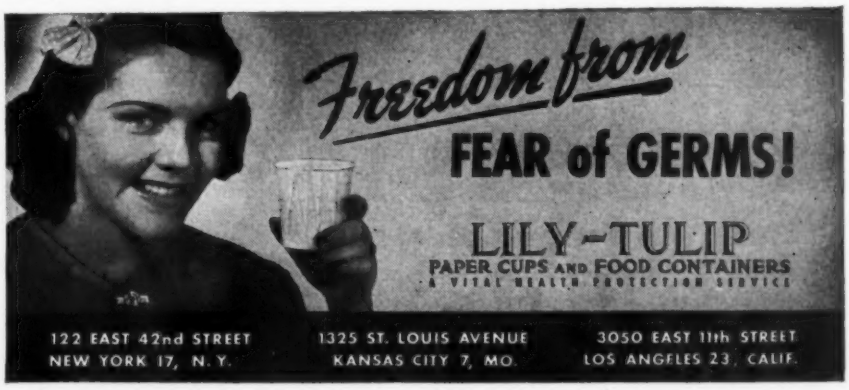
When the State Is a Deity

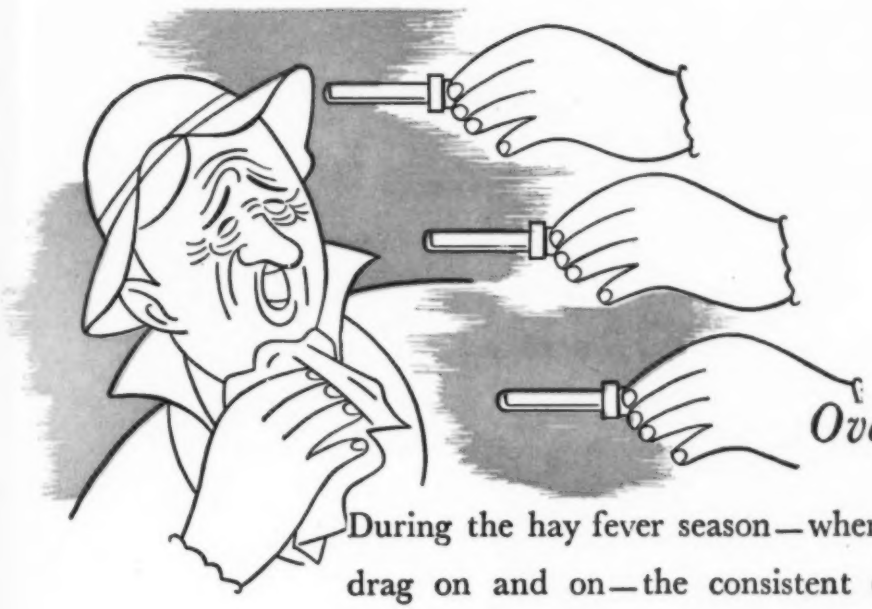
WE HAVE already been much influenced by English ideological concepts, growing more or less out of Continental war factors, and in this connection we need to watch changes, actual or portending, having to do with medicine. Deficit financing, the brain child of Lord Keynes, is an example of this sort of thing. Then the proposal that this country finance the postwar world emanated from the same source. The pending Wagner General Welfare bill bears certain resemblances to the "womb to the tomb" ideas of Sir William Beveridge. The plan of heavy thinkers in Washington to provide 60,000,000 jobs makes one think of the scheme of Beveridge described in his *Full Employment in a Free Society*. The state socialism which is the admitted aim of the British Labor Party contemplates nationalization of medicine along with everything else, to be accomplished under a "five-year plan." As we pointed out in an April editorial, trade with other countries under this totalitarian scheme would be governed by those countries' modifications of their own economic structure in accordance with British behests. We must be on our guard against the importation of such infections, fatal to medicine and to our own system alike. This war may have some strange, and unlooked-for consequences—the very things which the war was fought to avoid, or so we believed.

—*Medical Times*, July, 1945.

Health Program

ABSENTEEISM and VD control had become major problems. As the war boom neared its peak, business men and health authorities knew that something had to be done in that smoke-stained section of Brooklyn generally referred to as "over by the Navy Yard." The Fort Greene district (its quasi-official name) has a population of more than 200,000. A majority of its people work at the Navy Yard or in one of the 200-odd plants that dot the area—manufacturing plants, machine shops, candy factories, laundries, commercial bakeries, wholesale meat houses, garment factories, and so on. How could a better-health campaign best be put over among almost a quarter-million persons of all types and descriptions? Representatives of business, labor, medicine, public and private welfare agencies got together, set up the Fort Greene Industrial Health Committee. Early last year, the committee launched a





Over and Over...

During the hay fever season—when the days of distress drag on and on—the consistent effectiveness of Neo-Synephrine assures prompt relief time after time. The last application before frost decongests as surely as the first.

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For Nasal Decongestion

THERAPEUTIC APPRAISAL: Quick-acting, long lasting . . . nasal decongestion without compensatory recongestion; relatively free from cardiac and central nervous system stimulation; consistently effective upon repeated use; no appreciable interference with ciliary activity; isotonic to avoid irritation.

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SUPPLIED as ¼% and 1% in isotonic salt solution, and ¼% in isotonic solution of three chlorides, bottles of 1 fl. oz.; ½% jelly in collapsible tubes with applicator.

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IF HANDS COULD TALK
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"GIVE ME 55!"

. . . they would ask for that cream formula which was especially developed to give protection against the particular hazard to which they were exposed in your industry. Two, or possibly only one of the entire series of West cream formulas will be all you require . . . If, for example, the hazard was an organic solvent such as kerosene or gasoline, etc., West Protective Cream No. 33 would be best . . . If, on the other hand the hazard were heavy oils and greases, West Protective Cream No. 22 would give more adequate protection . . . The booklet "Production Safeguards Against Dermatitis tabulates most proven skin irritants and the West creams best suited for combatting each specific hazard.

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The Triple Change offers a single binaural unit with three or more instantly interchangeable chest pieces. Convenience and compactness are the result.

Nine chest pieces of 3 different types are available; *Diaphragm type* (flat metal chest pieces) — large, medium, and small sizes, most efficient for high-pitched murmurs, fetal heart sounds, etc., *Bell type* chest pieces — most efficient for low-pitched murmurs and breath sounds; *Diaphragm type* (Bakelite, with raised contact diaphragms) particularly for blood pressure observations.

Available also, special stethoscopes for special purposes, such as Anaesthetist's Stethoscope, Double Stethoscope for teachers, Blood pressure Stethoscopes and Engineer's Stethoscopes.

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high-powered educational program. Its aims: to reach the worker at his job, talk to him in easy-to-understand language, and impress on him the importance of preventive measures: blood tests, check-ups, chest x-rays, proper diet, and other health measures. Principal means of getting the story across is a four-page tabloid—a breezily written little sheet jam-packed with cartoons, photos, comic strips, newsy headlines, and all the other tricks of tabloid journalism. Its title: "Here's To Your Health"; its slogan: "What you don't know *can* hurt you." Published twice a month, it is distributed by a shop committee in each of the cooperating plants. Well over a million copies have been circulated, and its sponsors say that 91% of its recipients read it. Requests for copies have been received from more than 400 industrial health groups in various parts of the country. Typical of the tabloid's approach is this front-page cartoon: An overalled workman, monkey wrench in hand, is being interviewed by St. Peter at the Pearly Gates. The workman explains what happened to him: "My wife told me to see the doctor, but I kept putting it off." In various other ways, the tabloid urges the worker to "Consult your doctor—not the advertisements." Every issue carries a box advising each reader who hasn't a family physician to telephone the Kings County Medical Society for the names of three G.P.'s in his neighborhood. Those who cannot afford private care are urged to go to the district health center maintained by the City of New York. In addition to the tabloid, the committee has made steady use of posters prominently displayed in the various plants. It has had less success in the presentation of health films and health talks, but carries on nevertheless with union cooperation. Recently it laid plans to conduct a survey of absenteeism, to set up a cooperative medical service for small plants to x-ray the chests of all workers in participating plants, and to establish an industrial nursing service in cooperation with the Visiting Nurse Association. Funds for the work have been supplied by the sponsoring companies and by welfare agencies. In its first year, the project cost about $15,000. The Fort Greene Health Committee functions as a unit of Neighborhood Health Development, Inc., an organization set up in 1929 to work with the New York City health department, the American Social Hygiene Association, and the Brooklyn Tuberculosis and Health Association in the development of neighborhood health centers.

—*Medical Economics*, July, 1945.

THE Venereal Disease Division of the U. S. Public Health Service has allotted a total of $8,756,876 to the states and Territories for venereal disease control for the fiscal year ending June 30, 946. Of the total, $4,378,438 is to be matched by the states. This will assure a combined Federal and state venereal disease control budget of more than 13 million dollars for the year.

PROF. DECIO PARREIRAS is the President of the newly organized Brazilian Association of Industrial Medicine. The headquarters of the new Association are at Rio de Janeiro, and the purposes embrace the promotion of the improvement of knowledge referring to the pathology of industrial sicknesses, the prophylaxis of which is of such great interest to the economic development of Brazil.

Socialized Medicine

THE country's war experience in the field of health has clearly given impetus to the belief that the healing arts should be made available to everyone, irrespective of means. Another contributing factor is the desire of the government to make certain that the best of medical care is brought within the reach of every veteran of this war. At least, 1,500,000 and probably 2,500,000, will incur disabilities, it is estimated in Congressional circles. In addition, there are approximately 350,000 veterans of World War I. The health needs of these men will be a permanent responsibility of the American people. In the postwar period, veterans of this and previous wars will constitute a large and important segment of the population. The number may well be 20,000,000,

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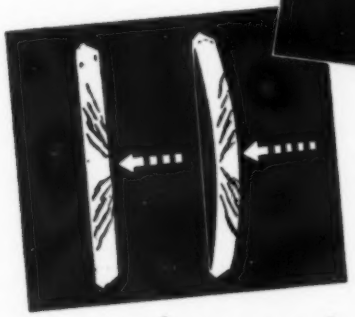
The curve of the lens aids in deflecting particles. Many blows that might fracture regular safety lenses are deflected by the 6-Curve Super Armorplate Lens.



Glass fragments tend to be wedged away from the worker's eye if lens is fractured by an irresistible blow. Workers' eyes are safe.

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it is estimated, or one in every seven of the total population. Veterans with their families may comprise from one-third to one-half of our whole population. The concern of veterans thus arises not only from an obligation to protect the future welfare of our fighting men and women, but also from the practical necessity of maintaining and improving the health of the whole people. These considerations are of profound importance from the human standpoint. They have equally subtle and potent political implications. The notation must certainly be made that many persons who need medical attention are not receiving it because they cannot afford it. But will a socialized plan provide the service needed without greatly encouraging expensive government bureaucracy? Will the business of curing the country's sick become both the business of politicians and physicians? Will it lower the quality of medical services and medical research? Will it kill the incentive of young men who might normally wish to pursue a medical career? Or is medicine in the same position that education found itself a century ago—moving from a private to a public field? Those who favor compulsion find only one answer to these questions. But those who regard freedom of opportunity one of the precious assets of America deny that government control of medicine is the conclusive answer. Louis H. Pink, President, Associated Hospital Service of New York, admits frankly that the majority of the medical profession, as well as hospital and professional people generally—including the American Bar Association—feel that centralization of medical care might be a step away from the democratic concepts to which this country has adhered in the past. Certain significant facts emerge from the violent controversial discussions surrounding the above questions. Voluntary efforts are presently getting into their real stride. They have not proved to be a drag on the country's high quality of medical proficiency or the brilliant progress made in research. By expanding and improving our public health service, by supporting various group and community systems, and by encouraging private insurance companies to add to the usefulness of their services, the country should find that federal control of medicine is not necessary to insure a healthy nation. Historically the experience of foreign countries provides no evidence to the contrary.

—From "Socialized Medicine," in *The Index*, 25:2, Summer, 1945, published by The New York Trust Company.

Chlorophyll

A NEW drug made from chlorophyll, the coloring matter which makes plants green, is performing "curative miracles" in an army hospital here (Topeka, Kansas) according to Oliver E. Ebel, secretary of the Kansas Medical Society. Ebel said a young doctor at Winter General Army Hospital had been experimenting with the drug which he had removed from alfalfa and grass cuttings from the hospital lawn. He said: "The drug, which is brand new, will stop the drainage of wounds and is one of the most potent ever discovered in the healing of wounds. From all indications, it will cause a sensation in the medical profession when it has been perfected. The doctor is now preparing an article about it for medical magazines and it is scheduled for publication in the near future."

—*Chicago Herald American*, July 7, 1945.

Trouble Ahead

WE MAY as well face the facts. Last year was a record not only for the number of strikes but for general labor disturbance throughout the country. And while this week's reports show few strikes in progress it is probable that before the end of this year the strikes, both in numbers and in intensity, will be far in excess of last year and the turmoil more pronounced. The basic reason for this state of affairs appears to be the determination of union leaders to get all in the way of pay increases and concessions possible before the Japanese war ends and the inevitable reaction sets in. To this end government agencies, such as the War Labor Board, are openly defied and the "no-strike" pledge, so loudly proclaimed by the publicity-drunk bosses of the C.I.O., is no longer even nominally observed. In the face of what is happening it

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Fend-I is easily rubbed onto the skin, is emollient, and contains its own skin conditioning factor. This modern protective cream does not interfere in any way with the normal activity of the skin glands.

Like all Fend products, Fend-I is easy to apply, readily removed at work's end—in every way a most valuable aid in combating skin irritations.

WRITE for the latest edition of the Fend Brochure, which thoroughly details the complete Fend group of protective creams and lotions, and includes a comprehensive application chart.

Fend-I is applied sparingly.

When rubbed well onto the skin, especially between fingers and about finger nails it creates an effective barrier.

Mild soap and warm water will remove Fend-I after work is finished.

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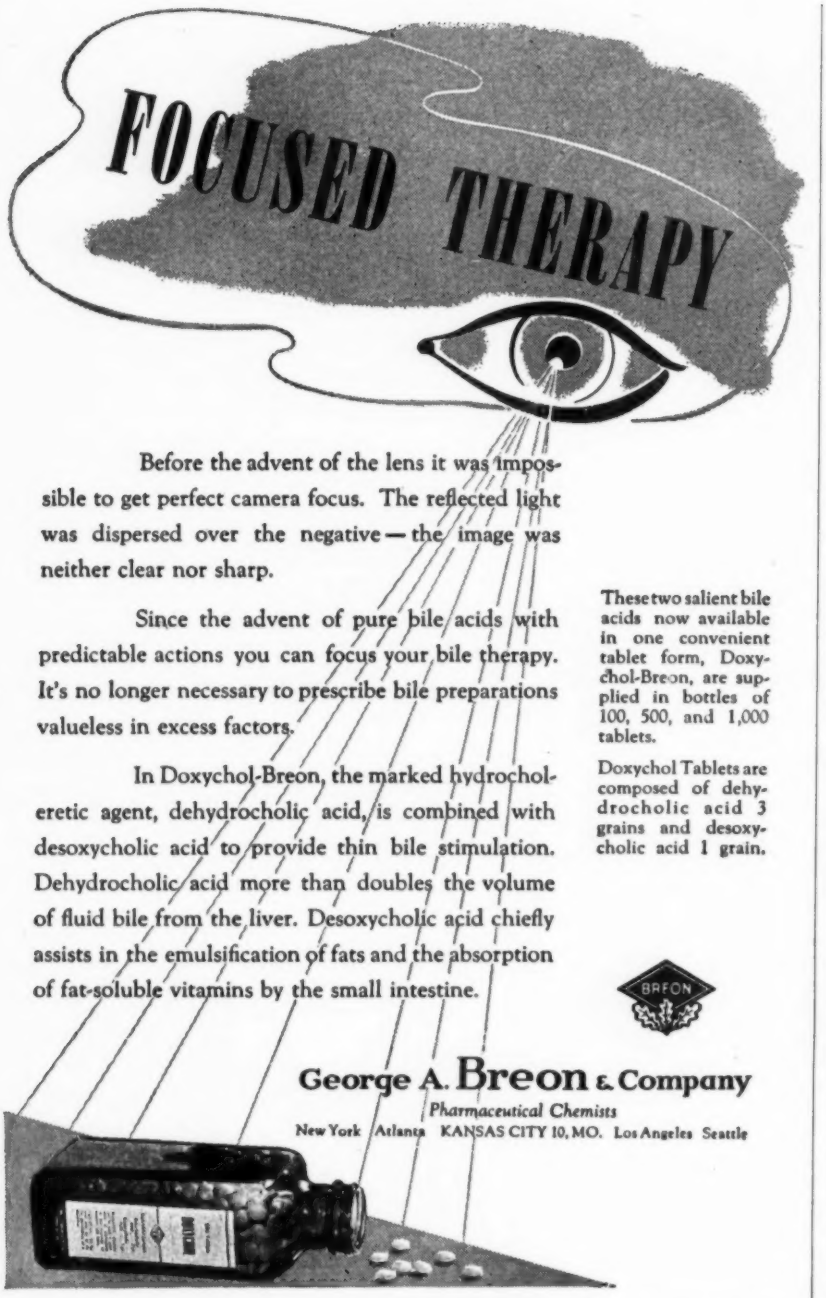
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Before the advent of the lens it was impossible to get perfect camera focus. The reflected light was dispersed over the negative — the image was neither clear nor sharp.
Since the advent of pure bile acids with predictable actions you can focus your bile therapy. It's no longer necessary to prescribe bile preparations valueless in excess factors.
In Doxychol-Breon, the marked hydrocholeretic agent, dehydrocholic acid, is combined with desoxycholic acid to provide thin bile stimulation. Dehydrocholic acid more than doubles the volume of fluid bile from the liver. Desoxycholic acid chiefly assists in the emulsification of fats and the absorption of fat-soluble vitamins by the small intestine.
These two salient bile acids now available in one convenient tablet form, Doxychol-Breon, are supplied in bottles of 100, 500, and 1,000 tablets.
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becomes ridiculous to regard seriously this widely advertised and always phony pronouncement, though the C.I.O. organs continue to beat their breasts and denounce as "reactionary tools of the greedy rich" those who refuse to accept it as a noble demonstration of labor's unselfish patriotism. The cold truth is that, but for the gravity of the situation, the no-strike pledge would be a national joke. Certainly, it takes a lot of effrontery to keep on insisting that it is, or ever has been, effective. It may have been honestly proposed at the start, but it never was honestly carried out and it is not honest at all to pretend differently. Actually, it has been the cloak under which the unions have pushed their demands, wasting many millions of man-hours in war industries by slowdowns, walkouts and open strikes. These have sometimes been deplored by the professionals but never denounced and never stopped. Every army and navy officer with anything to do with the business of war production knows these facts. It has not been deemed expedient for them to talk about them. Under heavy political pressure, some of them wrote Labor Day letters of congratulation, of which they were heartily ashamed, to labor bosses, lauding labor's "magnificent effort" at the very moment vitally needed war materials were being held back by strikes. Privately, these officials did not hesitate to voice their resentment. But that was all they could do. They were even unable to advocate corrective legislation and Mr. Roosevelt, then President and Commander-in-Chief, personally used his influence to block the efforts of Congress in that direction.

—FRANK R. KENT, in *Chicago Journal of Commerce*, July 21, 1945.

Democracy and War Production

IMPORTANT as these accomplishments are, and indeed vital to victory for democratic forces on all fronts, it is perhaps as important that the War Production Board, as the nation, has gone about its job in a democratic way. While fighting for democracy abroad, we have not forgotten to preserve it at home. Vested with vast powers over the production and distribution processes of the American economy, the War Production Board has used those powers as sparingly as was consistent with the job of getting war goods produced. And when it was forced by war needs to use those powers, the Board turned to industry and labor advisory committees for advice on how our objectives could best be achieved. Within the Board itself, scrupulous care has assured that proposed policies and orders are thoroughly reviewed, before issuance, for consistency with the public interest and with general Board policy. Because broad industry-regulating orders may work unjustifiable hardship on some individuals, provision is made for individual appeals for partial or total exemption from specific Board orders. Because the Board has no interest in regulation for mere regulation's sake, it has gone far in eliminating unnecessary red tape, revoking and relaxing orders as conditions permit, and exempting small orders and small enterprises from many of the detailed controls that are essential in the case of large producers using relatively large portions of the Nation's resources. Through an accelerated decentralization program in 1944, the Board has sought to have more decisions made by regional and district officials familiar with local conditions. Through the War Production Drive, the Board has stimulated cooperation of management and labor in solving war production problems within individual plants. And through its enforcement policies and its provisions of hearings before compliance commissioners, the Board has undertaken to assure that justice is done in the imposition of penalties for violation of Board orders. That all of these bulwarks of democracy could be preserved in the face of the desperate urgency of war production is a tribute to the spirit animating the government — but more, a tribute to the people of the country, whose unity in appreciating the urgency of our task has itself made democratic cooperation a satisfactory alternative to dictatorial regimentation.

—From "War Production in 1944," Report of WPB Chairman, J. A. Krug.

. . . PROMPT SYMPTOMATIC RELIEF IN 85.3% OF CASES

To the working girl, particularly, dysmenorrhea is a definite problem—involving time-off from work, lowered efficiency, inconvenience and embarrassing explanations, in addition to the actual pain and distress of the condition itself. Consequently, primary dysmenorrhea is a real challenge to the industrial physician.

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Brand of Sympathomimetic Anodyne Tablets

offers relief not obtainable with analgesic medication alone, because it is designed both to relieve pain and, at the same time, to control the underlying etiologic factor . . . abnormal uterine contractions.

85.3% EFFECTIVE—In a controlled clinical study on young industrial workers, Fairo (Indust. Med. *12*:201-202, 1943) found Nethacetin effective in 85.3% of cases—usually within ½ to 1 hour. Ephedrine-like side actions, such as nervousness and insomnia, were rare.

Each Nethacetin Tablet contains ⅔ gr. Nethamine (brand of methylethylamino-phenylpropanol) hydrochloride, 3½ grs. acetophenetidin, and 2 grs. acetylsalicylic acid. Dosage is one tablet every hour or two until relief is obtained. Usually not more than three tablets are needed for each period.

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"Total" Therapy

FOR INDUSTRIAL DERMATITIS

"The therapy of a majority of the cases of contact dermatitis encountered in industry", according to the noted dermatologist, Dr. Frank C. Combes[1], "requires no further medication than the intelligent use of a *good buffer solution such as Liquor Aluminum Acetate (Burow's solution)* . . . and a *good crude coal-tar paste.*"

His preference for wet dressings solution is **Domeboro Tabs** ("widely used in industry", particularly by Parkes[2] at Curtiss Wright for cutting-oil dermatitis)—because it is "a convenient tablet which, when dissolved in water, releases a *lead-free aluminum acetate in appropriate dilution,*" with a substantial percentage of boric acid.

The *crude coal-tar paste* used at New York University, according to Combes, "is manufactured commercially under the name **Daxalan**"—which has been found *superior to distillates, filtrates and pastes containing liquor picis carbonis.*

It must be properly applied for "optimum benefit", and Combes advises thinning with **Domolene** for spreading over a large area—because in his judgment its hydrophilic ointment base "does not materially lessen the therapeutic efficacy of the paste."

With tissue repair under way, and only erythema remaining, the use of **Domeboro Ointment** (each ounce of which, in a special hydrophilic base, possesses the therapeutic action of one Domeboro Tab diluted in a pint of water), permits a quicker return to work, while healing is promoted by its efficient topical action.

(1) Combes, F. C.: Indus. Med., July, 1944.
(2) Parkes, Morey: Indus. Med., January, 1944.

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REPORTS show that physically impaired workers employed in factories are just as efficient in the jobs they can do as their unimpaired fellow worker. In fact, experiments have shown that some sightless workers have developed a high sense of touch, which has, in certain assembly jobs, enabled them to excel workers with normal sight. I feel that the record will show that handicapped workers have a keen appreciation for having been given gainful employment, which causes many of them to become the least troublesome and most loyal workers of a concern. In a recent survey by the Bureau of Labor Statistics, the general opinion of management in some 300 establishments was that 87% of the 63,382 impaired workers employed in these establishments were reported to be just as efficient as the unimpaired doing similar work. In respect to absenteeism, injury frequency, and labor turnover, the physically impaired were rated as superior to the unimpaired. While 44% of the impaired workers were reported as having an absentee record no worse than their fellow workers, 49% had better records, 38% were reported as having just as good an accident record, 51% a better record than the workers without disabilities. These figures may not be conclusive, but they are certainly convincing. I wonder if many of us know exactly which job in our company can be held by a person minus arm or hand?

—From "Management's View Concerning the Employability of Physically and Mentally Handicapped Workers," by CARL R. SCHEDLER, in *Connecticut State Med. J.*, July, 1945.

Mental Problems

THE first in the group of particular interest and concern to industry is the insane; known as such to the psychiatrist, but either unknown to, or considered just queer by the management. Many large industries have individuals of this type who do excellent work. In my own practice, at any one time, I may have a dozen or more people that are insane enough to be commitable to an "asylum," but who, under supervision and treatment, carry on work very satisfactorily. Their continuance at work is of the greatest rehabilitation value. It makes them get well faster. So far none of these patients has caused any difficulty. This is no recommendation for indiscriminate employment of the insane, nor for the industry to be an adjunct of psychiatric practice, but it is a recommendation, that if a case of insanity is known, understood, and under supervision he should be employed without a sense of risk or danger. These people should be considered on their performance and not on their diagnosis. The next group is the so-called "psychopathic personality," who may even be brilliant, but cause considerable trouble because they have quick and violent tempers, are emotionally variable, have little aim or purpose in life, do not stay put, carry a chip on the shoulder, lie glibly and are irresponsible. In this group are most of the drunkards, addicts, bums, hoboes, the shiftless, the sex perverts, the criminals, some of the agitators and chronic trouble makers. As a group they are a bad lot. They give far more trouble than the insane. By far the largest group with the greatest variety of symptoms are the so-called psychoneurotics. These people have problems and difficulties that are expressed in bodily symptoms, emotional disturbances or abnormal behavior. As in private practice so in industry, more than 65 to 80% of those who seek medical advice repeatedly are psychoneurotics. They have pains and upsets; become tense or depressed; suffer from fear, anxiety or sleeplessness. Their minds are always on their symptoms and their symptoms perpetually on their tongues. They are forever "bellyaching." This group represents not only the largest, but also the most ill understood, and ill treated group in the whole population, and hence in industry. As a group, they make up about three quarters of all nervous and mental illnesses. Just as in the Selective Service examinations all the rejectees did not come from the lower social, economic and educational strata, and all rejections from the military service were not limited to low ranks, or to those coming from the underprivileged class, so in industry, the mental illnesses are not

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a *stable* solution of carbamide (urea) 10% with sulfanilamide 5% in glycerin of unusually high hygroscopic activity. Anhydrous chlorobutanol 3%—a local anesthetic *that is therapeutically compatible with sulfonamides*—is included for its analgesic and antipruritic properties.

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Indications:

Local management of suppurative and non-suppurative otitis media, and of sulfonamide-susceptible infections of external auditory canal.

White's Otomide is available in dropper bottles of one-half fluid-ounce (15 cc.)—*on prescription only.*

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56J

limited to the labor class. Men underneath are much alike with the same mental mechanisms, with their own peculiar difficulties, reacting alike to strain, fatigue, insomnia, disappointment, friction and bodily ailments. All, regardless of class, have personal, domestic and financial problems. The goals may vary but in striving for them, all suffer alike from frustration. It is rather the make-up of the man in respect to his heredity, environment and personal experiences that determines his susceptibility or immunity to insanity. Man to man, the total personality assets and liabilities in one group are not different from the other group. Therefore, I don't only imply, but state as a fact, that the supervising, the managing and the directing groups in industry are just as liable to serious mental illnesses of all kinds as is the worker. There is a great difference, however, when one of the leaders has a mental handicap. Because of his commanding position, such an individual, when sick, will have far greater effect on the disturbance of the industrial organization than a workman, since the official supervises men, whereas, the workman handles a machine. . . . The experience of several large industries has already shown the great values and practicability of having a psychiatrist's services available, on a full, or part time basis, or even on a consultation basis, depending on the size of the company. Whatever the position or relationship between the psychiatrist and the particular industry, his job should not be only to examine and treat patients, but, more importantantly, he should organize and conduct a general educational program for the plant. What does industry get out of all this effort? In meeting these various problems, the industry must not feel that it is being asked to do missionary or welfare work, rather, to contribute its share to the general social welfare. The handicapped soldier or civilian does not want pity or charity, rather, he needs sympathy, understanding and a chance to be self-supporting. In the case of the soldier particularly, pampering and coddling are very harmful and should never be resorted to by the family, society or industry. In providing them jobs it helps them to make a decent and respectable living, rather than allow them to be on a dole, the cost of which indirectly and finally comes out of the industry. In meeting these needs the industry makes an investment for its own good in material gain, because a healthy, happy, satisfied and willing employee is a safer, more efficient and more productive employee. Among the men there is a feeling of team work. When more goods are put out in less time with less waste, the profits are greater. For such greater returns as social betterment, better morale, and greater profits the industry needs to spend a very little sum. This is only mentioned if the cost of such service is a major consideration with the management. This effort for maintenance of morale and productivity is an infinitesimally small fraction of what is spent for maintenance of the plant. Yet in doing so the industry prevents many evils and difficulties among workers and eliminates unnecessarily long convalescence from illnesses.

What the industrial psychiatrist advocates is not an experiment, since the results, where tried, are proved. Even if looked upon as an experiment, again the industry is not expected to spend more than a fraction of 1% that it spends on experiments on machines, materials or markets. Remembering again the importance of the man's mind and its health such an expenditure is a very wise investment since it is the mind that runs the man, that runs the machine, that puts out that material, that flows to the market, that brings the profits. In conclusion, we see that the industry has among its employees a surprisingly large number and variety of mental illnesses, and because of no care or plan for these problems they go unrecognized, thereby causing an alarming number and type of difficulties which handicap smooth and efficient operation of the plant. These mentally handicapped come from all ages, stations,

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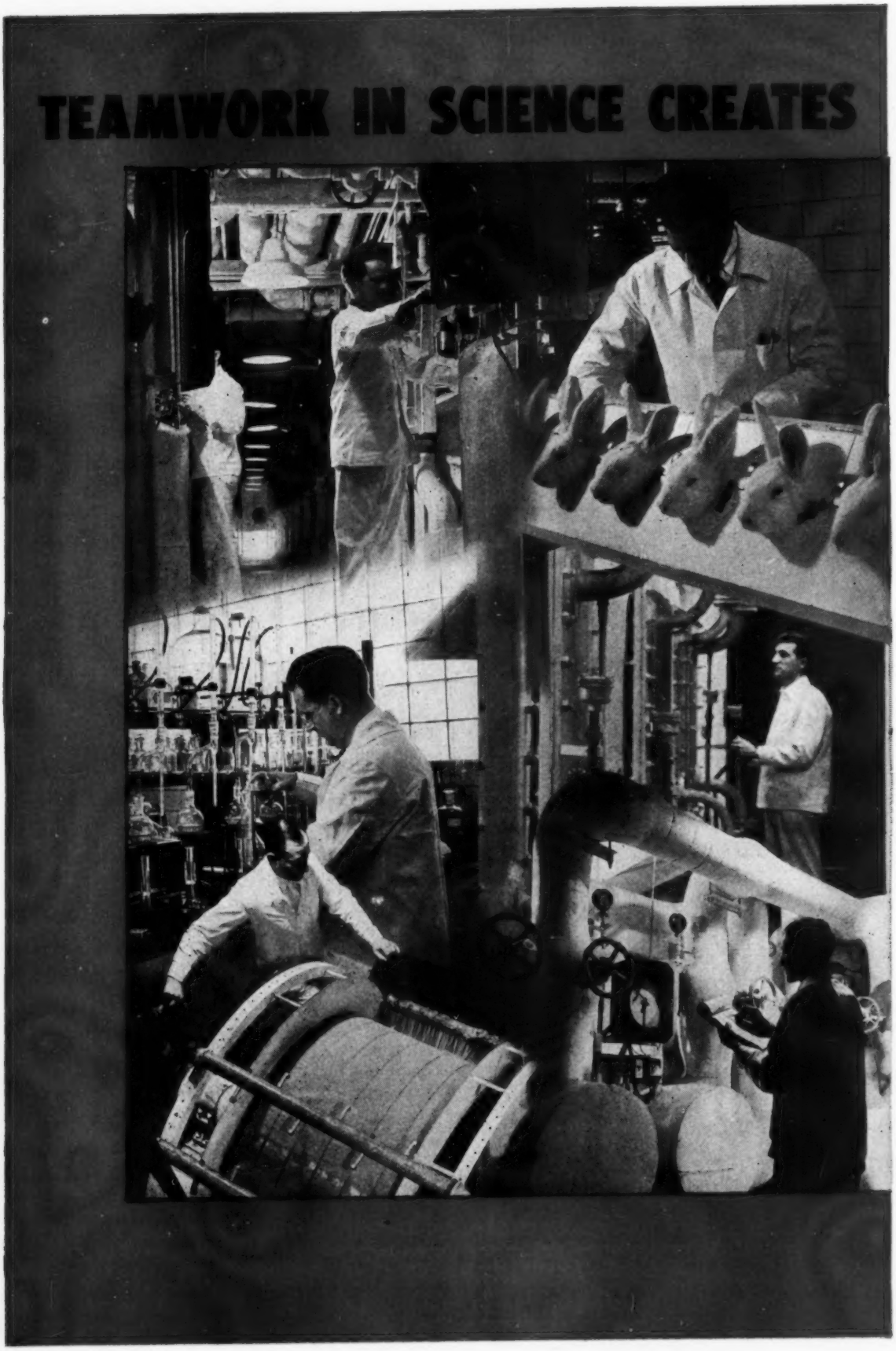
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and classes. The bigger the fellow so handicapped the more disastrous for the plant. The problem of the returning veteran is in the lime light but it should not force the greater problem of the civilian from attention. The major nervous and mental difficulties are described with some emphasis on the psychology of the returning veteran. It is shown that those properly selected for the positions of leadership, after psychiatric orientation and training, can, not only recognize, but also correct the trouble at the source. They, failing, will pass the problem on to the industrial physician and finally, if necessary, to the psychiatrist who should be on the consulting staff of every modern industry. In the past we have not looked for these problems, and now that we see them, let us not get alarmed, but be prepared to handle them to the advantage of the man, the industry and the society. The role of psychiatry in industry is a new one, but it has tremendous possibilities and opportunities to do great good. The psychiatrist's interest and help is not only in the individual himself, but in his relationship with others. It is the harmonious relationship that spells success in every collective human effort, particularly in the industry.

—From "Mental Problems Affecting Industrial Workers," by PHILIP J. MOORAD, M.D., in *Connecticut State Med. J.*, July, 1945.

CURRENT ARTICLES of QUALITY

Social Medicine

JOHN A. RYLE, Oxford, "Social Medicine as a Discipline," an address to the Association of Industrial Medical Officers given at the London School of Hygiene and Tropical Medicine, October 16, 1944; published in the *British Journal of Industrial Medicine*, 2:2, 108-110, April, 1945. Text: "In a highly industrialized country like ours industrial medicine must clearly be accepted as a large and very important branch of social medicine as a whole. Both are concerned with the study and the service of community health and sickness, are likely to employ common methods of socio-medical inquiry and to require similar or identical departments for training and research. If interest in, and the provisions for, industrial medicine have hitherto been slow of growth there is no doubt that their rate of growth will now be accelerated, and that workers in this field will make new and valuable additions to method and to the other foundations of knowledge upon which the social medicine of the future must build its disciplines.

"In the short period since I went to Oxford I have repeatedly been asked for definitions of social medicine. None that I have seen or attempted have seemed to me entirely satisfactory, for they cannot at once be sufficiently brief, detailed and comprehensive. The subject is too large. We can, however, say that it is concerned with aetiological inquiry in its widest sense. It has already evolved and will continue to evolve methods of study appropriate to its purposes, among which vital statistics and socio-medical surveys—with the gradually improving techniques which they require —will make essential contributions, while neither laboratory nor social experiment will be excluded from its province. Education, research and practice are all of as much interest to it as they are to clinical medicine, from which (like the medical sciences) social medicine is a natural off-spring. It is concerned with the man-environment relationship, using environment in its fullest implication to include both the material and the personal environment. Its interest is with health quite as much as with disease. In a recent paper (*Nature*, 1944, March 25, p. 363) Professor Sargant Florence defined social medicine as 'the study of the variations in human health and efficiency associated with variations in social conditions.' This is an acceptable definition in so far as the research functions of social medicine are concerned, but it gives no indication that the subject has other academic functions in the sphere of undergraduate and post-graduate teaching and manifold functions in the sphere of practice.

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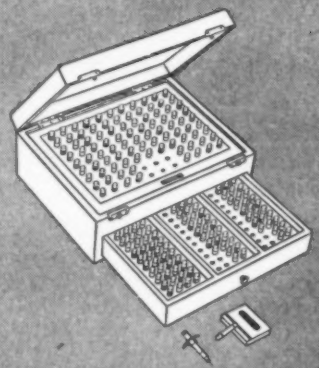

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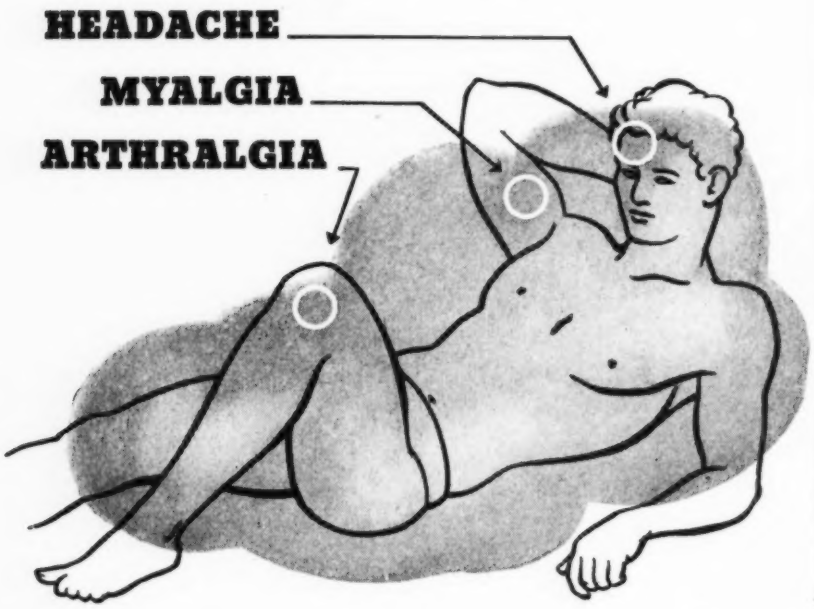

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*The Pharmacological Basis of Therapeutics, Goodman, L. and Gilman, A.: Analgesics and Antipyretics, New York, The Macmillan Company, 1941, p. 227.

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social medicine as a discipline. As such it may be properly regarded for, like clinical medicine, it is not a science nor yet, on the other hand, to be considered merely as an art or mode of practice. Without a careful study and development of methods and principles it is even possible that social medicine in its new phase—for the ideas supporting it are by no means new—might be given a false start at a time when its contributions alike to human knowledge and well-being are more than ever in demand. Perhaps I may make my present concepts and approach clearer to you by describing—in illustration of social medicine as a discipline—some of our small beginnings at Oxford. But before doing so it may be helpful briefly to outline the influence on medicine of certain other disciplines which have marked the history of the past century. In the process we shall discover some gaps which have been left in the main structure and the consequent need for a considered integration of all the sciences relating to man, that is to say the biological, the clinical and the social sciences. With this integration social and industrial medicine must be intimately connected. Both the historical retrospect and the illustration from current experience may serve as a preamble to the few suggestions which I shall then put forward bearing upon developments and partnerships in your own sphere of interest.

Historical Retrospect

If we look back upon the evolution of medicine in the past century we can recognize three distinct, if overlapping, disciplinary periods. The first might be described as the period of the 'pathological disciplines,' in which, under the influence of the great physician-pathologists—notably Bright, Addison, Gull, Hodgkin and Wilks in this country—the intimate study of morbid changes and processes in the dead-house came to add finite knowledge to the naturalistic medicine of Hippocrates and Sydenham. Histological, chemical and experimental methods followed, but the whole edifice of pathology was reared upon the foundations of morbid anatomy. This pathological discipline was concerned with disease rather than with man in disease.

"The second period was the period of the 'experimental or laboratory disciplines' and witnessed the evolution of bacteriology and protozoology under the influence of Pasteur, Koch and the great malariologists. A little later came the contributions of the biochemists and nutritional physiologists, whose work is reaping such a rich harvest today. These disciplines have all been concerned with the specific causes of disease, for the most part patiently elucidated in the laboratory and with the aid of the laboratory animal, although they were frequently prompted and assisted by experience in the clinic or the field.

"The third period, from which we are now just emerging, might be described as the period of the 'technological disciplines.' It has witnessed the invention of innumerable diagnostic instruments and techniques, including those due to radiology, cardiography, chemistry, endoscopy and biopsy. These techniques have assisted the more accurate recognition and study of the appearances and processes of disease in the living patient. They have provided methods of physiological and pathological study at the bedside. Like the other disciplines they too have been concerned with the study of disease in man rather than man in disease.

"These three disciplines have been and will remain invaluable and necessary to progress, but they have all tended to distract attention from the patient as a person and as a member of a family or group or larger society, and from those domestic, occupational, economic and other stresses which so frequently provide the background of disease and disability. They have studied the intimate rather than the ultimate causes of disease. They have, to a considerable extent, been responsible for the over-specialization of thought and action which has marked the medicine of the past half-century, in the course of which the old clinical humanism has suffered a partial eclipse. Important though their influence has been on the teacher and the student and on practice, it has not been always or wholly a bene-

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ficent influence. We have lacked during the period of their development an integrating discipline to enable us to see things whole and in their proper relationships to one another.

"During the same century in which these disciplines evolved, and prompted by the pioneer influence of men like Chadwick, Simon, Southwood Smith and Farr, there was, of course, a parallel discipline directed towards the study and elimination of the environmental causes of disease. I say 'parallel' advisedly, for preventive and remedial medicine have never shared their problems as freely as they should have done. Drainage, water supplies, and the detection and isolation of infectious disease and, more slowly, attention to housing and the material conditions in industry were until a relatively recent date the chief concern of public health authorities and the factory inspector. Consideration for the personal, social, economic and nutritional aspects of public health—as for the psychological aspects of individual health—somehow lagged behind. We now recognize that the discipline of public hygiene has been open to the imputation of being, like the other three, impersonal. The intimate man-environment relationship, like the mind-body relationship in clinical medicine, was not sufficiently stressed in the earlier conceptions of industrial and preventive medicine. In the medical schools, as in the service of the community, remedial medicine and public health have been treated in separate compartments. The practitioner for the most part has become remarkably incurious about the causes of disease and their removal; the health officer, too, incurious about the intimate life of the citizens whose health he protects. Health education has been but tentatively fostered. To put the case quite briefly and in another way, disease and its immediate causes have been intimately studied; health and its causes are only just beginning to attract the attention which they should command; the patient as a person (rather than a 'case') and as a member of a social group has often been neglected.

"And so, coming full circle, we discover the need for fresh directives in the shape, firstly, of a better planned social medicine, serving as an integrator and influencing both education and research and, through them prevention and practice; and, secondly, of a better planned clinical and personal medicine, which will keep in better perspective the body-mind-environment relationships of the individual. It is surely significant that both the Goodenough Committee's report and recent memoranda of the Royal College of Physicians should have emphasized the urgent need for developing the teaching of social and of psychological medicine in the undergraduate period. The applications of such teaching to the problems of industry need no emphasis.

A Teaching Programme

Now let me briefly relate how we are hoping to meet this situation at Oxford in the respective fields of education and research. We are first of all trying to ensure that the teaching shall become available throughout the clinical period. Social medicine should not and cannot be regarded as another special study. Its relations with clinical medicine are too obvious; they must be taught together. The course which we gave in the first working year included a series of lectures by myself on the broader scope and aspects of the subject, with special consideration of outstanding diseases such as tuberculosis, the venereal diseases, rheumatic fever and peptic ulcer, each discussed as a social rather than as a clinical problem. A second series of lectures was given by my colleague, Dr. W. T. Russell, on the elements of vital statistics, with consideration of mortality tables and their preparation, of infant and maternal mortality and mortality in relation to occupation and socio-economic class; and on the epidemiology of measles, diphtheria, whooping cough and tuberculosis. In addition we arranged for special lectures or demonstrations on their services or particular problems by Dr. Williams, Medical Officer of Health for the City of Oxford; Dr. England, Tuberculosis Officer for the County of Oxfordshire; and by Miss Rees, head of the Almoner's Department at the Radcliffe Infirmary, on the province and the

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functions of the medical social worker.

"Our other main approach to the subject is through the method of the case-conference. These conferences are attended by students in the clinical period and by house-officers and other medical graduates and almoners. A case from the wards or elsewhere is first of all presented clinically by the medical clerk or house-physician. It is next presented from the social point of view by the almoner (as medical social worker), who will have secured the full cooperation of the patient and visited the home or place of work or both and made the necessary inquiries in regard to the domestic and economic situation, to work and wages and any particular difficulties in the material or personal environment. Regarding the conference as a consultation we then endeavour to see what correlations may be established, or at least considered, between the patient's disease and his or her living and working conditions and, with the help of the senior almoner, what can be done on discharge from hospital to ensure an amelioration of conditions or the availability of special forms of help and after-care or re-employment. Not infrequently, as might be expected, and especially in the more chronic types of case, the social history throws quite as much light on the patient's trouble as the detailed investigations in the hospital ward. A diagnosis is achieved in the fuller sense of the word. We have also arranged for field-visits for small groups of students to a factory welfare centre (the works themselves, for security reasons, are not at present accessible) and to public health concerns. Later we hope to provide experience for some of them in the shape of home visits and an introduction to the methods of social history-taking. As between the lectures and other demonstrations we thus provide a preliminary view of social medicine as it touches both the individual and the community. The background of vital statistics I regard as particularly important, for the student in hospital is too little informed about the incidence and mortality (according to age, class and occupation) of the diseases which he sees.

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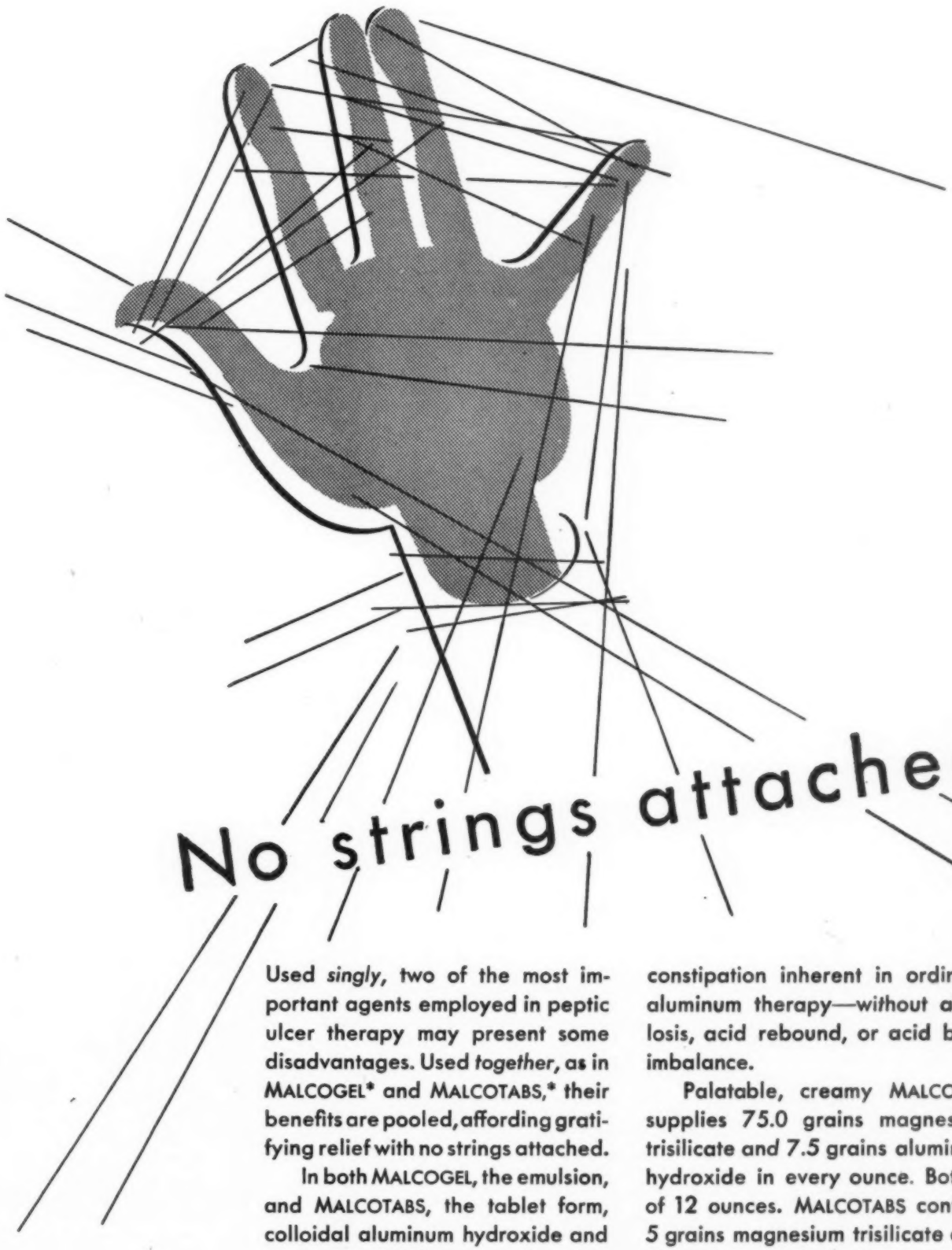
The Work of an Institute

TURNING next to the work of the Institute of Social Medicine, it should be mentioned that, in addition to my own staff, the Institute houses at present the Oxford Nutrition Survey and the Bureau of Health and Sickness Records.* The latter comes under my directorship and is equipped with modern punch-card and sorting machinery. Our first field-survey is directed to a study of the health, growth and development and infection-experience of the pre-school child in the City of Oxford and will cover a large sample to be obtained from all social groups. This survey is based on the welfare centres and involves correlated clinical, anthropometric and social studies and a three-monthly follow-up — a paediatric research assistant collaborating with a social worker under the general direction of myself and Dr. Russell. Dr. Dagmar Wilson and I have also been engaged upon a goitre survey in north Oxfordshire on behalf of the Goitre Sub-Committee of the Medical Research Council. Dr. Russell has undertaken an analysis of sickness absenteeism records in a large factory with a view of correlating accidents and the main types of sickness with age, sex, season and particular trades or types of work. We have already a good collaboration with the health departments in the City and County, and with the medical and welfare departments of a factory. We are considering, in a preliminary way, the standardization of a pre-employment health examination.

"It is not likely that the Institute will interest itself in specific industrial hazards. We look to Dr. Donald Hunter and his department at the London Hospital and to others for the further activation of interest and research in this important field. It is more than likely, however, that we

*Endowed by the Nuffield Provincial Hospitals Trust and serving the Berks, Bucks and Oxfordshire Region.



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In both MALCOGEL, the emulsion, and MALCOTABS, the tablet form, colloidal aluminum hydroxide and magnesium trisilicate are blended to give quick relief which persists. This is accomplished without the constipation inherent in ordinary aluminum therapy—*without* alkalosis, acid rebound, or acid base imbalance.

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WAR BONDS . . . THE ESSENCE OF VICTORY

shall interest ourselves in the prevalent types of illness encountered among factory workers, illness not necessarily confined or directly or wholly due to the particular industry but causing a large sick-wastage in it or in industry as a whole. Peptic ulcer and the chronic rheumatisms might well be studied in a factory community in their possible relationships with age, sex and season and with changing shifts and certain types of physical and mental stress. We have enough on hand to keep us busy for some time to come. You will note that we make no sharp distinction in our minds between industrial and other social problems. Industry, we recognize, provides communities and environments which lend themselves to particular studies, but the worker has his domestic environment too and is a member of the general community. Given good cooperation and understanding, social experiments should, however, be more readily devised in a factory than in more scattered populations. Changes in the material environment, hours of labour and amenities can be made and their effects on health and output statistically assessed. Such experiments must eventually prove of value both to the worker and the work.

Future Developments

FINALLY let us consider how the universities may come to play their part elsewhere in the development of this new discipline. Edinburgh and Birmingham are establishing departments of social medicine and it is quite clear that there will be room for other departments or institutes having a university association and envisaging diverse programmes of teaching and research. Some of these will doubtless concern themselves primarily with the problems of industry. The practice of industrial medicine can only benefit from academic collaboration.

"How and where could industrial medicine as a discipline within the broader framework of social medicin be best developed? Given the men and women with appropriate training and vision, given the endowments which it would well repay industry itself to provide, it would at least seem reasonable to suggest that a great university city, such as Manchester, might include within its medical faculty a department of social medicine wherein the problems of health in the factory, shop or outdoor trades would be a first consideration; that Liverpool, as a great seaport and university city, might have an institute with a special interest in the problems of maritime hygiene and of sickness hazards and incidence among seamen, both at sea and ashore; or that Cardiff might create an institute which would turn its attention more particularly to the problems of health and disease in mining communities.* In such institutes (which I would rather see associated with a university than specially erected to work in isolation on behalf of a single industry or on a specific problem) there should be opportunities for the post-graduate training of doctors and social workers as well as for statistical and field or other special research. With them the practising industrial medical officer should share his experience and his difficulties. And always there should be the closest possible relationship between the academic department and all those engaged in handling the practical problems of health and disease in nearby working communities. The clinician, the statistician, the nutritional physiologist, the industrial psychologist, the social worker and others will find their place in the academic team. Laboratories for physiological, nutritional and psychological investigation, a library and reference bureau and statistical machinery will be necessary features of such institutes. But social and industrial medicine will always need to pursue their problems in the field, to study the community at risk and so to counteract the old tendency to academic detachment from which medical research and teaching in this and other countries have too long suffered. The framing of disciplines and the integration of clinical, scientific and social studies are tasks of such fundamental importance that we would do well to give them the most careful consideration and to avoid precipitate adventures. These subjects are now much in the public eye. It will fall to your Association, among others, to ensure that they are wisely fostered."

*At the time of delivery of this address the announcement of the Nuffield Foundation's offer of grants totaling £150,000 for the development of teaching and research in industrial medicine at Manchester, Glasgow and Durham had not been made.

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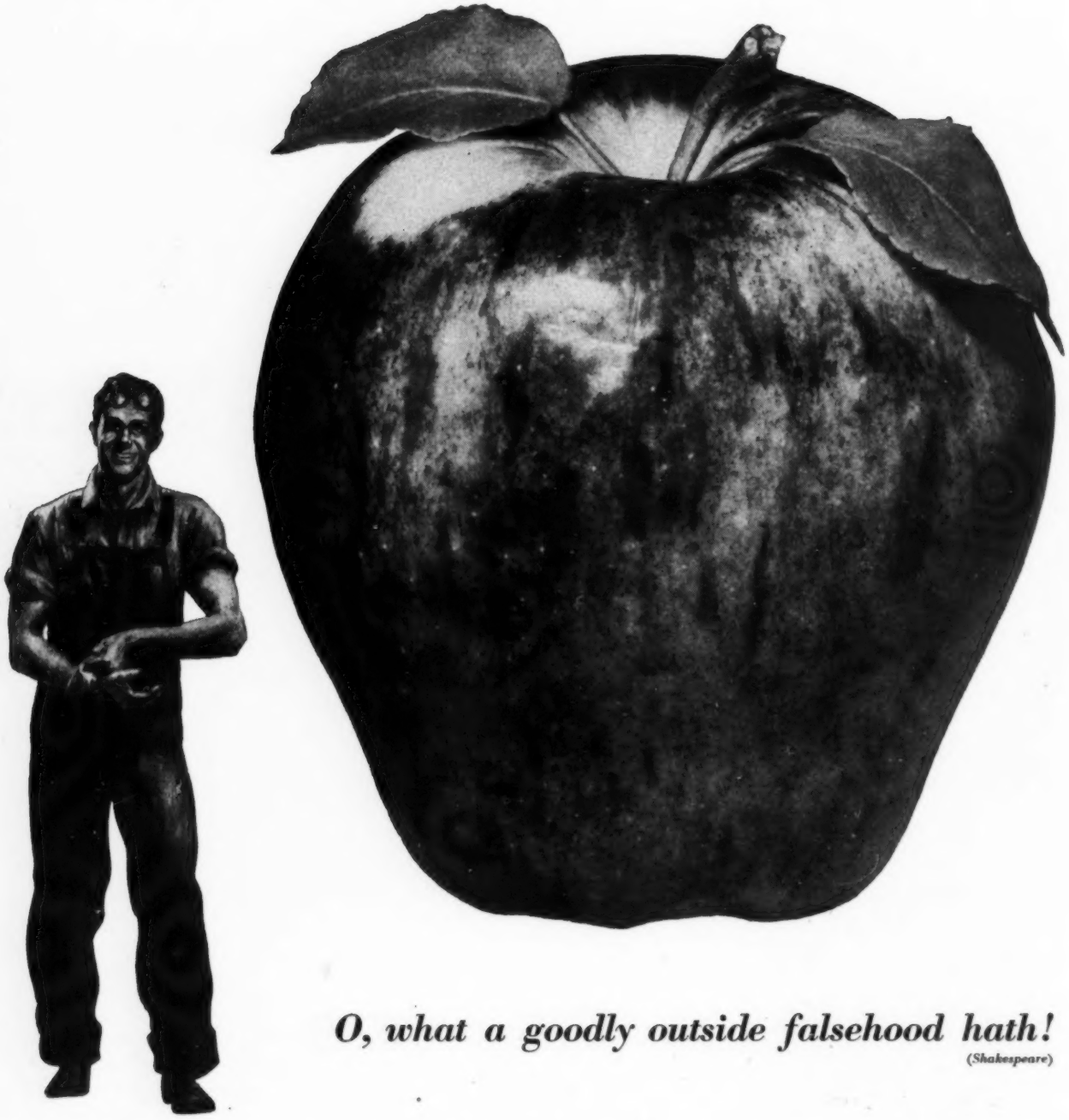

O, what a goodly outside falsehood hath!

(*Shakespeare*)

It's when a bad apple looks as sound as the good ones that it gets into the barrel and contaminates others. Only *one* bad apple is still one too many!

Similarly in our daily occupations, we unknowingly are exposed to tuberculous infection through occasional contacts with persons, i. e., individuals who, unfortunately, are entirely unaware of their own infection.

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This magazine is published to promote sound thought upon and concerning industrial medicine and traumatic surgery. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited.

Industrial Medicine

Reg. U. S. Pat. Off.

The editors will exercise care in checking on the accuracy of data printed, but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same, in the current or any subsequent issues, as they may be inclined.

The Journal of Industrial Health, Occupational Medicine and Traumatic Surgery

With which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery."

The Science, the Law and the Economics of Industrial Health

Volume 14 August, 1945 Number 8

The Personal Side of the Army Industrial Medical Program at the San Francisco Port of Embarkation

LIEUTENANT COLONEL JEAN S. FELTON,
Medical Corps, Army of the United States

THE establishment of medicine in industry connotes the acquisition of an appropriate number of capable physicians assisted in the promulgation of their medical mission by graduate nurses familiar with the unusual demands of a plant practice. Beyond this immediate professional grouping is a staff of semi-professional, clerical, and custodial personnel who, in their placement in an active industrial medical organization, are not integrated ordinarily into the composite picture of the medical group. Methods of ethical practice have been delineated for the industrial practitioner by the Council on Industrial Health, American Medical Association and the Committee on Industrial Medicine and Traumatic Surgery of the American College of Surgeons. In any well planned outpatient or hospital scheme there are standing orders for nurses, which are mandatory matters for the successful operation of satellite dispensaries, which are subordinate to the main plant dispensary or hospital.

The Background

THE success or failure of industrial medicine is spelled, much as many physicians are disinclined to admit, by the manner of approach of the personnel making first contact with the patient. Assuming that all workers coming to a dispensary are in an altered frame of mind, all channels from receptionist to nurse to doctor to technician to clerk, must be mentally pitched to this concept so that immediate and effective relationships provocative of good-will will result. Clinical assistants have for untold years presented behind their white-gowned fronts a "holier-than-thou" attitude which has alienated innumerable patients and done much to defeat the good accomplished by the group-practice type of medical installation. The frozen-faced office nurse and sharp-tongued technician are prototypes well known as long standing features in medical clinics.

An organization, young in years, is advantageously situated in that its formative years are the present time of operation, and the mistakes of dispensary practice can be avoided by the common sense application of the principles of modern business administration and personnel control technics. A commercial enterprise is established in peace or war in order to return to the owners a profit on their investment. There is no reason why an industrial medical establishment cannot carry this principle of business into its operation, not in the sense of profit-making, but in the sense of conducting its practice in such a fashion that were it founded on a cold capital basis it would run to the black through the development of a high level doctor-patient rapport. Few medical groups have at any time interpreted actively the principles of commercial success stories into their operation, such as the common and perhaps hackneyed policies of "courtesy," "consideration for others," "dependability," or "friendliness." These qualities can be acquired by an energetic staff in a brief period of time by an example-setting group leader aware of the group's faults and attributes, and who knows the desires of medical management in the presentation of a training program focused on the ultimate goal of successful personal relations.

The Problem

IN THE operation of an industrial medical program rendering in-plant care to many thousands of workers of all intellectual and economic levels, one was faced with the problem of training a slowly growing group of approximately 100 persons into the professional attitude. Employing, in many instances, wives of service personnel or individuals who had come to the metropolitan area seeking war work, one found a conglomerate aggregation of workers whose only experience with professional conduct or hospital procedures had been their infrequent contacts as patients. To mold such an assemblage of willing but unknowing young men and women into a presentable office staff required at first a knowledge of the errors committed by the dispensary semi-professional and clerical workers.

Individual errors committed early in the formation of the group were handled through personal interviews, but when matters of dress and hygiene presented themselves for correction, a group discussion of common mistakes was indicated. One worker wore daily an extremely potent perfume whose detection was possible by any patient coming through the front entrance, even though the wearer was offices away. White uniforms that were changed infrequently, that were soiled, reagent-stained or torn, were unsightly

in an otherwise immaculate installation. The problem of a repelling body odor was common to a very few women employees. The sweater and bobby-sox combinations displayed by several were of ill-taste in an organization conducted at a serious adult level. A practice offensive to all patients was the asking of personal identifying information such as age, marital status and medical history, in a loud voice, with no consideration for the shy, modest, or slowly angering patient. Telephones were being answered in a curt and unfriendly manner, which impersonalized completely the rendering of a service to the individual, involving that one thing of prime importance to him—his own personal well being.

Added to these undesirable practices were local behavior patterns of marked jovialty, horse-play, infrequent but outstanding matutinal evidences of previous celebrations, and raucous "break-time" gatherings, not serious crimes per se, but yardsticks to the incoming patient of perhaps diffidence, disinterest and impoliteness—all being manifestations appearing in a hard working group, whose members just had not had the basic principles of institution or medical behavior sufficiently pointed up to them as to round out their employment values to the fullest.

It is to be emphasized certainly, that these practices were not common and that they were generally isolated but, appearing as they did semi-occasionally, they served to point up the need for a program of training of all the personnel in the desired technique. Thus it was decided to train all in order to eliminate what was apparent in the few.

The Plan

THE elimination of characteristics stemming in many cases from childhood among a staff of x-ray and laboratory technicians, clerks, receptionists, nurses, ambulance drivers, orderlies, dental assistants, physiotherapy aides, matrons, and the like, required tact, a careful approach, and a manner inviting discussion without a teacher-accusation of the students. The help of the Civilian Personnel Branch Training Section of the San Francisco Port of Embarkation Personnel Division was sought in the formulating of a course in "Personal Relations" to be offered small groups of 20 each.

It was decided that the material to be given could be covered adequately in five sessions of one hour each, the sixth to be marked by a discussion of military insignia by the Industrial Medical Officer, and topped by the presentation of certificates.

A course wherein personal appearance, personal hygiene, make-up and related subjects were to be discussed demanded an instructor whose own immaculate appearance would be exemplary to the students in any hoped for conversion. In addition, the discussion leader should be one versed in teaching methods and not shocked or embarrassed by frank handling of truly personal matters. Such a person was secured and following agreement on the syllabus, the course was offered, with the first group being the trial balloon for later ventures.

The Material

IT WAS the desire of the writer that no punches be spared in the forthright presentation of problems common to women in industry such as those of menstruation, the first trimester of pregnancy, personal hygiene, and blending from those into manner of dress, use of make-up, and concluding with acceptable office practices.

The outline of the course follows:

TABLE 1.

OUTLINE OF COURSE IN PERSONAL RELATIONS

I. Your Job:
  A. From management's viewpoint
  B. From your viewpoint.
II. In terms of personality traits, what does it take to handle your job?
  A. Self-analysis (with check list).
  B. Goals of achievement.
  C. Recommended procedures toward the development of personality traits desirable in a successful office worker.
    1. Good grooming.
    2. Care of the hair.
    3. Care of hands.
    4. Care of feet.
    5. Care of eyes and teeth.
    6. Care of complexion.
      (a) Make-up techniques.
    7. Taste in dress.
    8. Development of good carriage and posture.
    9. Desirable health standards.
III. The efficient office worker (with check list):
  A. Meeting the public.
  B. Securing information from the public.
  C. Directing the public.
  D. Parting from the public.
  E. Voice and diction.
  F. Telephone technique.
  G. Housekeeping:
    1. Desk.
    2. Office.
    3. Conservation of equipment and supplies.
IV. Development of the professional attitude:
  A. Towards your superiors.
  B. Towards your fellow employees.
  C. Towards the public:
    1. Mental attitude of sick people.
    2. Identification of Army insignia.
  D. Your standards of conduct:
    1. Problem of sensitiveness (complexes).
    2. Development of:
      (a) Humor.
      (b) Tact.
      (c) Adaptability and willingness.
      (d) Enthusiasms.
V. Summarization:
  A. Identification of other Army and allied insignia.
  B. Presentation of certificates.

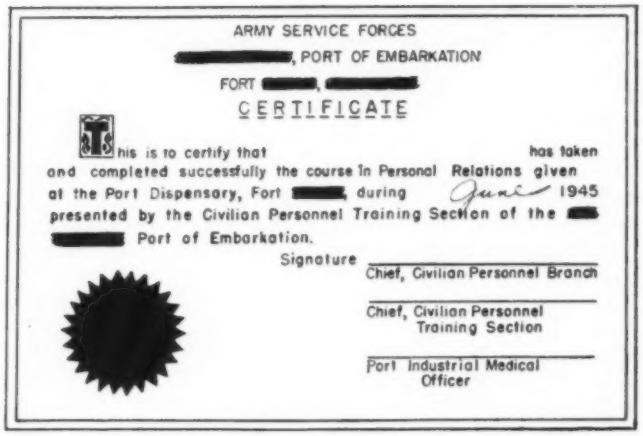
The Reaction

THE first and immediate reaction to the material consisted of an unofficial renaming of the course by the students to "Charm School," which, it is believed, smacks instantly of its welcome reception. This glowing eagerness was frosted at first by a hesitancy to partake in discussion, but as the employees warmed to the instructor, a greater ease in the interchange of ideas was noticed. Many of the young women wished that the course were longer, for they felt quite sincerely that much had been gained in personal improvement.

The concluding touch, as mentioned above, was the discussion of military insignia, not only of the armed forces of this country, but our allies as well, for the instant recognition, particularly in a Port of Embarkation of a uniformed individual is a flattering device, and is the first step in establishing good relations with military patients. With the extension of remarks of appreciation for the interest and cooperation shown, certificates (see Fig. 1) were presented, signed by the Chief of the Civilian Personnel Branch, the Director of Civilian Training, and the Port Industrial Medical Officer, with a gold seal authenticated by the headquarters imprint.

The Result

THE investment in time allocated to this training program was worth many times over the few hours lost that were devoted to the course, as an untrained professional group had been changed quite painlessly into a staff whose conduct was in full keeping with the many clinics and out-patient services whose technical procedures and administration they supervised. Smiles were noted on faces of receptionists where previously scowls were the featured attraction. Tele-



ARMY SERVICE FORCES

[redacted], PORT OF EMBARKATION

FORT [redacted]

CERTIFICATE

This is to certify that [redacted] has taken and completed successfully the course in Personal Relations given at the Port Dispensary, Fort [redacted], during June 1945 presented by the Civilian Personnel Training Section of the [redacted] Port of Embarkation.

Signature

Chief, Civilian Personnel Branch

Chief, Civilian Personnel Training Section

Port Industrial Medical Officer

Fig. 1

phone voices had been vitalized and preliminary medical histories were taken in a quite confidential manner, much to the pleasure of the patient, and needless to say, without the reluctance all too commonly displayed in former weeks. The patients were treated like human beings with distinct psychic or somatic difficulties and at all turns of the not too easy outpatient road their feelings and consideration were given triple A priority.

The other result, not too visible, is the security possessed by the writer in reviewing the actions of the staff in knowing that the procedure is being done the right way by skilled individuals, and authority can thus be delegated with complete freedom of thought and absence of concern.

Summary

A STAFF of 100 young men and women of semi-professional and clerical occupation levels, employed in the Army Industrial Medical Program of the San Francisco Port of Embarkation, was trained, through the media of a course in "Personal Relations," toward the goal of the development of a professional attitude in all staff-patient relationships.

Conclusions

DISPENSARY personnel of semi-professional and clerical levels can be trained through careful planning, to develop a professional attitude in their contact with patients in a large out-patient service rendering medical care to many thousands of workers.

2. Successful completion of such training will result in a better and freer delegation of authority and responsibility in the accomplishment of an important medical war-time mission.

3. Better efficiency and improvement of worker morale can be effected in a professional group, whose sole commodity is the rendering of personal service.

[Grateful acknowledgment is extended to Mr. Clark Robinson and Mrs. Jennet Durst.]

IN A RECENT month, at the Washington Navy Yard, 195 cranemen, enginemen, and locomotive engineers were given complete physical examinations including chest x-ray, depth perception tests, and complete urine analysis. Of this entire group, 15.4% showed either a hernia of some form of relaxed rings; 10.3% showed high blood pressure (hypertension over 160/100); 7.7% showed defective depth perception or were unable to grasp correctly the instructions of the Keystone Telebinocular used in this test; and 3.0% showed positive sugars or albumins. At the time of the examinations, all men having defects were notified of them and were given recommendations.

Safety Rev. (U. S. Navy), 2: 21, June, 1945, abs. in *Industrial Hygiene Digest*, July, 1945.

Request for Serum Specimen

TO THE EDITOR:

For the purposes of determining the merits of a newly devised laboratory procedure in the diagnosis of carbon tetrachloride damage, a request is made of all your readers for small quantities of serum from workers exposed to carbon tetrachloride at any concentration, and from patients suspected of having carbon tetrachloride poisoning or known to be so involved. One-half cc. of clear unheated serum is sufficient for our purposes and this may be collected as for any other serologic procedure. In sending specimens the name of the patient need not be disclosed, but it would be helpful if it may be indicated that the serum derives from:

1. Unaffected workers in carbon tetrachloride.
2. Workers mildly affected (functional symptoms).
3. Determined acute carbon tetrachloride intoxication.

If the concentration level of carbon tetrachloride at work is known, this information will be valuable. Reports will be made to all persons sending in specimens but at the immediate time the significance of positive results may not fully be established. Correspondence with physicians and laboratories is invited in order to furnish additional information should this be desired.

—CAREY P. MCCORD, M.D.,
10 Peterboro St.,
Detroit, Michigan.

Maintaining Labor Standards in Wartime

—And Women's Peacetime Role—

EMILY SIMS MARCONNIER,
New York State Department of Labor,
New York City

THE subject assigned to Mrs. Elinore Herrick, Director of Personnel and Labor Relations at Todd Shipyards, who was scheduled to present this lecture, was "Women's Peacetime Role." However, before going into that particular subject, I want to discuss how New York State has been able to maintain labor standards and still speed war production. The two subjects are closely related.

New York State ranks high among the many states in its labor legislation. The many labor laws which protect workers, employers and the public have gradually developed after many years of education and struggle. It took more than 40 years to obtain our present hours law for women. It was not until it became a well recognized fact that fatigue and efficiency are closely related that the short work day and week became generally accepted. The New York State hours law for women provides for an eight-hour day, six days a week, a total work week of 48 hours. Women over 21 years of age may not work between the hours of 10:00 P.M. and 6:00 A.M., and younger women may not work after 9:00 P.M. So far as the men workers in this state are concerned, their daily hours are not limited but they must have one day of rest in seven. Unfortunately, the hours law for women does not include all of the working women in New York State. In fact, only about half are covered. But it does include factory workers who are so vitally a part of the war effort.

There are, of course, other labor laws including minimum wage, child labor, meal periods, laws covering hazardous occupations and many others.

Given at Long Island College of Medicine, Third Post-graduate Course in Industrial Medicine, October 30-November 3, 1944.

When the war broke out, the Army and Navy Departments urged all employers engaged in war industry to speed up their production in every way. They were asked to run their plants 24 hours a day, seven days a week. In New York State, as well as in many other states, this presented a great problem inasmuch as women workers could not work more than eight hours a day, six days a week, and could not work at night, and men could not work on the seventh day. New York State solved the problem promptly. Too many people remembered that during the last war a law was passed to suspend the labor laws for the duration. Public protest at that time caused the Governor of the state to veto the bill with a statement to the effect that no emergency justified the suspension of laws passed to protect working people. However, it was realized that employers must be given some relaxation in order to meet the needs of war production. The legislature passed a bill known as the War Emergency Dispensation Act. This law gives the Industrial Commissioner power to grant dispensations upon application from individual employers only when it can be shown that restrictions imposed by the labor laws interfere with maximum war production. The law has definite standards and limits the dispensing power. Dispensations may be granted only for six months when all the conditions must be reviewed in order to renew the dispensation. All dispensations must safeguard the health and welfare of the workers, and no dispensation may be granted if utilization of available labor supply or reasonable organizational changes would enable the employer to maintain maximum efficiency and production without sacrificing existing labor standards.

The original act, which covered only war industries, was amended a year after the war began to include essential civilian industries. The amendment also lowered the age from 18 to 16. This act has had the support of labor, employers and the public since the beginning. That employers have not objected to the "red tape" of having to apply for special dispensations and to having their requests investigated, is a tribute to their understanding that maximum war production is not furthered by long work days and weeks.

In other words, they know that production lags when workers get too tired. For the one employer who thinks the State Labor Department does not know there is a war on when it does not permit the employer to work his employees as long as he wants to, there are thousands who appreciate the need for restriction even in wartime.

As a matter of fact, employers have not been held up in their war production while the Department of Labor is making investigations because the law provides for provisional dispensations while investigations are being made. During the first six months of the war, New York State industries had to make quick adjustments to war production. During that period the Industrial Commissioner believed that they should be given every opportunity to meet the emergency and longer hours than were considered wise were granted and continuous seven-day weeks were the rule rather than the exception. The employers, however, having been given this chance through liberal dispensations to obtain additional help and equipment, to train additional workers and to make adjustments, were expected to shorten the hours of work, to go on multiple shifts and cut down on seven-day work weeks. It was very satisfactory to find that the employers by and large had made the necessary adjustments so that daily and weekly hours were cut and the seven-day week became the exception rather than the rule.

Since Pearl Harbor 6,562 plants have applied to the Industrial Commissioner for various kinds of dispensations. In 1944 alone, the Industrial Commissioner made 11,333 decisions, of which 10,871 were dispensations granted and 462 were denials. An individual plant often asks for various kinds of dispensations, such as longer hours, night work, shorter meal periods, seven-day weeks. The dispensations granted this year affected approximately 65,000 men and women.

Although a large number of dispensations has been granted since the war began, a recent survey made by the Division of Women, Child Labor and Minimum Wage of the New York State Department of Labor, showed that many employers have not found it necessary to use the dispensations to the full extent. The most common type of dispensation granted is for a 54-hour week. This survey, which was made of 300 firms in the State employing 70,000 females, showed that 70% were working within statutory hours, namely, 48 hours a week. The usual reason given by employers was that the quality and quantity of work are better on a short work week. They further explained that they had asked for a longer work week in case of emergency so that they would have the legal right to extend the work day and the work week if emergencies arose. This survey, of course, bears out the wealth of information which is available from British studies on fatigue and efficiency as well as studies made in this country following the last war.

There have been a great many problems in connection with the applications for dispensations. Great care has been taken to solve these problems in a realistic way. A 10-hour day for women, for instance, was a hard thing for the Labor Department to swallow. However, when we discovered that limiting women to nine hours a day was interrupting production because they were working hand in hand with men who were on a 10-hour shift, and when we found that the women had to wait for the men to share a ride home, we decided that we were not being very realistic about it. There are many plants in the State where women work five 10-hour days, which from their point of view and from the point of view of production is preferable to stretching the 50 hours over six days. Women like to have a day, which is not Sunday, when they can do their marketing and various other things that practically any woman who works has to do.

If employers are not satisfied with the decision made by the Industrial Commissioner in reference to their dispensations, they have the right to appeal to the Board of Standards and Appeals and to the courts. That out of the many thousands of dispensations which have been granted there have been only 25 appeals is proof that the act has worked. Employers have felt free to consult the Labor Department on their dispensations when they were not satisfied rather than to make an appeal, and usually a satisfactory arrangement was worked out.

The Labor Department works very closely with the Army and Navy in granting dispensations, especially if the request is for something out of the ordinary. These extraordinary requests are related to the peak periods in the war, such as the various invasions when extra supplies of various kinds are needed urgently and immediately. In such cases plants are permitted to work top speed day and night, seven days a week, for short periods in order to meet their deadlines. Recently, there was an immediate and urgent need for woolen jackets for servicemen. A deadline was set when the jackets were to be flown overseas and garment factories were told to step up production. The deadline was met because plants were permitted to

put in a great deal of overtime during these short periods.

A few dispensations for minors 16 and 17 years of age have been granted. However, extreme caution is exercised in the investigation of such applications and only in areas of critical labor shortages are hours lengthened. The New York State War Council, which in the case of these young minors must authorize the Industrial Commissioner to grant any dispensation, has set a limit of 10 hours a day with adequate lunch and rest periods, and a total work week of not more than 50 hours, nor more than six days a week.

WHAT will be the situation of women workers after the war? It is a question of vital importance. The close of the war will naturally end many of the jobs which women are doing in the major war industries, such as making ammunition, guns, ships and aircraft which will not be needed in such great quantities. Women, as well as men, need jobs to support themselves and their families. Even before the war women were over 24% of all workers, which can hardly be considered a minority group. There are approximately 18,000,000 women in industry at the present time, which is only 4,000,000 more than there were in 1940. Women are, therefore, not new in industry as many people seem to think. While it will not be necessary to plan for jobs for 18,000,000 women, there will undoubtedly be many more than 14,000,000 women who want jobs after the war. Following the first World War 40% more women were employed than before the war and it is estimated that the percentage will be larger after this war. A large number of women, of course, will drop out of industry entirely. They entered war plants for patriotic reasons and will not wish to continue. Other women find that they cannot carry on the two jobs of home keeping and factory work. However, women must no longer be considered a reserve group to be used only in emergency periods.

The problem of the employment of women probably, however, will depend upon the level of employment that can be maintained after the war and when the postwar period is over. If there is a high level of employment, women who need or want to work will find employment. The percentage of women who work for pin money is very small. Most women who work have to work, and they should be considered as persons and given a chance to work.

There are, of course, many problems to be solved. Jobs must be provided for men and women returning from war services. War workers shifting to new jobs create another problem. Methods must be found to tide workers over until new jobs can be found. The speed with which plants can convert and begin peacetime production is an important factor. Some plants have been constructed for the convenience of women workers which may prove to be an advantage to them. Another important problem is the extent to which rationing can continue until production of new goods can restock markets.

There are many favorable features for the postwar period. In the first place the demand for new jobs will be spread over a longer period than in the last postwar period because, of course, the European and Japanese wars will not end simultaneously.

Many workers will be needed in reconversion of plants and in the construction of new homes. It is estimated, for instance, that there will be a demand for a million new private homes. Authorities also state that in order to house properly the urban population, 1,600,000 dwelling units should be built every year for at least 10 years after the war ends. Other surveys of food needs and clothing needs prove that if we want our population to be properly fed and clothed, production should be stepped up tremendously, which would mean the employment of a large number of people.

Another encouraging thing for the postwar period will be the demand for goods that have not been available during the war. There will be a need to replace worn out machinery and to build new machinery for plants converted to peacetime uses.

The increased buying power of citizens accumulated during the war will be another important factor in the postwar period.

Manufacturers all over the country have set aside reserves for the postwar reconversion of plants so that they will be able to move rapidly when the time comes.

There are many more ways at present to tide workers over a transition period than there were following the last war. The condition of women in industry, for instance, has progressed a great deal since that time. Women who have left service industries to go into higher paid factory jobs during this war may have to go back to laundries, beauty parlors, restaurants and hotels, but, when they do go back, they will know that the minimum wage orders in these industries will protect their wages from falling below a certain level. This is true also in 25 other states which have minimum wage laws. They will know that they will not have to work longer than 48 hours a week, whereas in 1918 the legal hours were 54 a week. Then there is the Unemployment Insurance Law, effective in every state, which will tide workers over for a few weeks until they can get jobs.

Unions have multiplied many times since the last war and more and more women are members of unions, which will be of great advantage to them in bargaining for their rights.

In this state, as well as in four other states, employers will not be able to pay women less than men for the same job because of the Equal Pay Laws which are in existence. The law is new in the State of New York. It became effective July 1, 1944, and, while we have not yet had much experience with it, we know that it is going to be of great advantage.

There is a great deal of planning going on for the postwar period which is tremendously encouraging because it is being done by such a variety of groups. Industry is in the forefront in this planning. The National Association of Manufacturers, the Committee for Economic Development, Chambers of Commerce, and the National Planning Association are all looking ahead to the postwar period. Many of the larger companies have well developed plans for production and marketing. The Committee for Economic Development has done an excellent job of helping individual firms to proceed with their plans.

Similarly, the unions all over the country are working seriously on plans for the postwar period. Women members of unions will suffer in the postwar period to some extent because they have not been able to build up long seniority records. Some of the unions, for example, the United Automobile Workers and the United Electrical Workers, are carrying on their own studies and surveys of what women expect, want and need after the war is over.

Government and private organizations are also planning for the future. The Women's Advisory Committee of the War Manpower Commission, the Women's Bureau of the U. S. Department of Labor, the Division of Women, Child Labor and Minimum Wage of the New York State Department of Labor, the Women's

Trade Union League, and the League of Women Voters are among these organizations.

While it would probably be foolhardy to minimize the problems of women workers in the postwar period, at least it can be said that they are going to have a far better chance following this war than they had following the last war, and, if employment can be kept on a high level, their chances will be good.

Face to Face—What of the Interviewer?

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GOOD interviewing means good personnel relations. Successful human reconversion, to which industry and business are dedicated, may well be determined by the caliber of the interviewng that takes place during the next months—our ability to achieve mutual insight and cooperation through face-to-face, eye-to-eye contacts with the returning service men and women.

These men and women challenge all of us who carry on interviewing, whether it be in placement, counseling, supervision, education, or in social agencies. Subjected to both good and bad interviewing during these years in service, many service men are returning with very definite ideas as to what constitutes good personnel practice. Let us hope that we shall have wisdom enough to welcome these veterans as co-workers in establishing sound human relations in industry and in community and family life.

We can learn a lot about interviewing from some of the experiences of these men and in their initial contacts with civilian agencies. For instance, recently I visited two rehabilitation clinics. I sat for some time in the reception room of the first one, where a middle-aged spinsterish lady was snapping out instructions to the service men: "Sit down." "You'll have to wait for the doctor." "What do you want?" As two service men sat down near me I heard them say: "The same old run-around. Old Sour Puss certainly looks familiar." Hostility and resentment were already being fostered by brusqueness and lack of understanding.

The second clinic had chosen its best social worker to act as receptionist. Attractive and enthusiastic, she put each man at ease as he entered the clinic. Recognizing the urgency of each case, she allocated each veteran easily and tactfully to the right office. She also gave confidence to waiting relatives as they brought their worries to her desk.

As each interview, especially the first, colors all of the future relations of the person interviewed with the interviewer or the company, the importance of the interviewer can hardly be overestimated. Through employment interviews, draft board interviews, social agency interviews, and supervisory interviews, attitudes and feelings are built up which later result in action. Wherever there is a conversation with a purpose, there we have an interview.

Does the person being interviewed go from the interview with more insight concerning his own situation, himself, other people's attitudes and actions, with more courage to face the future; or does he go away with less self-confidence, less courage, more hostility, more insecurity?

Does the applicant lacking one arm go away from the employment interviewer convinced that he has something to contribute to a job, even though there is not an immediate opening? Does the employee who has asked his foreman for a transfer leave the interview with the foreman with more understanding of himself and acceptance of the fact that such a move would not be for the best interests of everyone concerned? An interviewer has not done a good job unless he gives the person being interviewed a chance to do a good job.

LET'S look at some of the types of interviews:

There is the Evaluation or Appraisal interview in which the interest is centered on the individual, his likes, and dislikes, his past, his future, his abilities. The employment interviewer, the social worker, the counselor, the dean, the doctor use the Appraisal interview constantly as a basis for placement or therapy. The assessment of a person's ability and need together with the reasons for them can be made only by an interviewer who can establish a common ground of understanding between himself and the other people. Testing, Induction, and Training interviews supplement the Appraisal interview.

The results of Therapeutic and Confessional Interviews are measured by subjective phenomena, by changes in the feelings and attitudes of the person interviewed, not by the objective yardstick of logical reasoning. Getting it "off one's chest," re-evaluating oneself, and working out appropriate behavior patterns forms the legitimate content of such interviews.

The Research interview is in order when the job analyst obtains his factual material and when the job evaluation man appraises the physical and emotional standards, of a particular job. Investigators of time and motion, safety, and opinion polls also use the Research interview as a tool for obtaining data for use in solving a larger problem.

Doctors, lawyers, Indian chiefs, journalists, social workers, salesmen, executives, detectives, methods and safety men, deans, community leaders—interviewers all; and, although their interviews differ as to methods, purposes, techniques, and content, they all have one point in common: no interview can be any more effective than the interviewer who conducts it. Every interviewer brings to the interview himself, his own adequacies, his own limitations, his background, his fears, his hopes, his philosophy of life. There are as many types of interviewers as there are interviews. Let's look at a few of them:

There is the Poker Face interviewer—the one who challenges the person being interviewed to make him smile. The silent and suspicious man who says: "I dare you to move me to any show of emotion." He puts the entire responsibility on the other fellow, and it is like pulling teeth to get him to speak. As he focuses attention on himself, he generates antagonism and suspicion.

There is the Smart Aleck interviewer. He will sacrifice anything in the world for a wise crack. His discourtesy generates a great deal of irritation, and one generally wants to hit him. He is the kind of person who says to the returning veteran, "I lived through the last war, so remember, I know just the way you feel." He likes to trip people up by quoting their former statements.

Then there is the interviewer with a power drive. People are objects to him; he alone is an individualist with freedom of choice. He never admits that he is wrong. He uses the words "definitely" and "absolutely." He implies through his facial expressions and gestures that he can get along very well without the other fellow.

Given at Long Island College of Medicine, Third Post-graduate Course in Industrial Medicine, October 30-November 3, 1944.

The "Oh So Charming" interviewer attempts to win everyone. Someone told him once he had a million-dollar smile, but now that he is over 30, the smile is running thin. One suspects that he always agrees with the last person with whom he speaks. He depends on setting one person against another; in that way he can satisfy his own egocentricity.

The "That Reminds Me" interviewer forgets the purpose of the interview entirely and is thrilled and charmed at having an audience, even though it is only one lonely soul. Off he goes telling about his success as a typewriter salesman. No matter where the interview starts, he ends up with autobiographical anecdotes about his life before he went into personnel work. One wishes he had stayed with the typewriters.

Then, of course, Mr. Milquetoast is always with us. His lack of poise puts the burden of keeping the interview going on the person who is being interviewed. Filled with fear and self-depreciation, he keeps saying through his facial expression and gesture: "Please like me." For making everyone uncomfortable, such an interviewer should be turned out to pasture.

WHAT about the good interviewer?

First, he remembers that he was given two eyes, two ears, and one mouth. That means that he looks, he listens, and he learns. He recognizes that his own personality is important in interviewing because the interview is necessarily a subjective affair. He measures his ability as an interviewer by his success in drawing people out, getting them to talk, and helping them to gain self-confidence. This can be done only if he has a sincere, a real liking for people as people, understanding them, not judging them. He can synthesize attitudes and situations as well as analyze them. Anyone can knock a watch to pieces but only the expert can put them together and have them run.

The effective interviewer studies the arts of communication, as he knows that everyone, whether speaking or listening, communicates constantly by means of gestures, posture, facial expression, and manner, all the expressive movements so indicative of emotional health. Unless the interviewer's own appearance and speech are acceptable, unnecessary barriers are built up which imperil the rapport he must establish if the person being interviewed is to achieve insight. As Dr. Preston has expressed it: "We measure other people by what we see, ourselves by what we feel."

The interviewer also checks his speech and listening habits. What about his tendency to interrupt and his habit of finishing sentences for people? Does he tend to repeat such phrases as "yes" or "that's right"? The other day I counted the number of times a certain executive said "that's right." By the time I reached 15 I stopped because of exhaustion. What about nodding the head in agreement, which can so easily put the other person to sleep? These speech mannerisms, which everyone has to some degree, can well be examined by the interviewer together with his techniques of listening. As listening is an active process, mere absorption of what is said results in the interviewer becoming a blotter, playing no constructive part in the interview.

The interviewer's facial expression helps to create either a positive or negative response on the part of the one interviewed. A face says one of three things at a given moment. (I suspect there are only three things faces can say!) Faces say: "I don't like you"; "Please like me"; or they say "I like you and I need you and together we can accomplish something." The interviewer realizes that what his face indicates to other people is either going to open doors in an interview, or, if it does not open doors, it is going to close doors. There is no middle ground.

The interviewer who is wise examines his manner. (We won't go into manners; not to do so is much safer!) He asks himself how much tension he creates in other people by his own inflexibility and cold manner. If a light manner is the enemy of dogmatism, it is certainly needed by the interviewer if he is to help the other person gain a clearer picture of his total situation.

NOW let's see how these arts of communication, which the interviewer has examined within himself, work out in the face-to-face interview.

Every interview consists of three parts: the approach, the discussion itself, and the departure. Most interviewers fall down on one or more of these parts, running the danger of losing the person at one point or the other. For instance, there is the interviewer who is very embarrassed at the beginning of the interview, but becomes more at ease as he goes along; then there is the interviewer who is stimulated with the initial contact but gets bored as time goes by; the third interviewer often makes a good beginning, does well in the discussion, but when the telephone rings, or he remembers the dinner date with his wife, there is an anticlimax at the end! The whole thing that has been so carefully and beautifully built up falls of its own weight. It is rather interesting to ask ourselves at what point we succeed in our interviewing and at what point we perhaps fall down.

In planning for a successful approach to an interview it is important to arrange for a convenient time, for privacy if possible, and for as comfortable conditions as one can manage. Pleasant first impressions go far towards lessening former resentment towards or fear of the interviewer.

Recently the founder and director of one of the outstanding adult education schools in the city told me that when he and the architect originally drew up plans for the school, they made sure that the design and decorations were such as to give people self-confidence; he wanted an auditorium and class rooms that would not frighten the students. Each time I go into this school I think of the wisdom of his dream, as there is not one thing in the exterior or interior that would frighten the adult scholar who has gone back to school after many years away from any contact with formal education.

The greeting of the interviewer to the person to be interviewed is also of great importance. A friendly, cordial approach will quickly set the other individual at ease; taking time to get acquainted, if necessary; the offer of cigarettes, if that seems in order; and placing the person to be interviewed so he does not face the light. Of all the many bad habits of the interviewer, compelling the luckless person to face a glare of bright light is one of the most discourteous. Are we trying to put him on the defensive or are we trying to place him at an advantage?

The discussion itself, remember, is a two-way affair. They say that parents, and teachers, clergymen and social workers have a difficult time conversing because they must mount a soap box for a lecture and cannot brook interruption. Unless they are doing the talking they are not too happy. So let's remember the interview is for looking, listening, and learning—not for lecturing.

If possible, give the purpose of the interview immediately to set at ease the mind of the person being interviewed. Start where he is; get his point of view, listen to get his story. The Job Relations Training

groups of the Training Within Industry emphasize the importance of getting the facts before any decision or action can be undertaken.

Avoid displaying any restlessness or hurry. The person must follow his own temperamental pattern of thinking and expression if we are to find out what this particular situation means to him and help him to evaluate it. Nothing that he says can shock us or put us on the defensive. Our own prejudices have been parked outside for the duration—and we hope forever!

Obvious praise or blame of the individual is calculated to arouse self-consciousness or resentment toward the interviewer, thus lessening the chances of honest self-evaluation. For the tears which sometimes accompany sudden insight of reasons for conflicts, a box of Kleenex presents an impersonal source of comfort.

Listen for over- and under-tones of what is being said; notice what is avoided; be aware of sudden resistance or anger. Does he emphasize his own inadequacies? Where does he place the blame? What demands is he making on life and on those around him? What effect is his total situation having on him?

Instead of asking leading questions (which result in obvious responses) ask questions mainly as a means of clarifying what has already been said. Following the lead of another person's thinking and starting where he is relieves him of possible embarrassment and confusion.

If humanly possible, write down only necessary dates and facts. Who likes to talk to someone who is constantly writing down things? First and foremost, the interviewer's face cannot be seen by the person being interviewed; and then there is always the wonder as to who is going to see the notes. A full report, however, should be written immediately after the interview, as facts have a strange way of becoming rearranged in our thinking after 24 hours. Describe in detail the appearance, speech, manner and conduct of the person, all of which equal in importance the content of the interview. Give your own interpretation of the situation, your own reaction to the interview, together with possible next steps.

Keep up your enthusiasm and interest until the end of the interview. Send the person away with renewed confidence in his own ability to solve his problem, and with recognition of your friendship. Summarize with him possible paths of action without being disappointed when there seems to be no definite conclusion or solution to the immediate problem. Results are sometimes written in the skies invisible for the time being. When the interview is over and the person is putting on his coat he may say something casually which gives a clue to what is behind the immediate difficulty.

Here are seven do's and don't's to remember in that next interview of yours:

1. Get the facts.
2. Save the person's face. 3. Look, listen, learn.
4. Don't argue, interrupt, give advice, or take sides.
5. Find out what the situation means to the person.
6. Emphasize what the person can do rather than what he can't do.
7. Be yourself, but be sure that your self is the self you really know you can be.

THERE are several things that might be done by industry, by education, and by rehabilitation agencies to raise the status of interviewing:

1. The establishment of training in interviewing by industry and business for supervisors, employment interviewers, personnel counselors, medical staff, etc., so that better personnel relations may exist.

2. Recognition of the importance of the job of receptionist. Usually considered unimportant, poorly paid, this job is often relegated to practically anyone who is available. Public relations demands that its status be raised.

3. Evaluation on the part of executives, doctors, professors, salesmen, foremen, etc., of their own interviewing techniques so that they may be able to make improvements.

4. Research in interview techniques in business, education, industry, medicine, social service, and community agencies to determine the usefulness of interviewing as an instrument for the control of human relations. Setting up demonstrations and industrial and professional experiments as to specific methods for all types of interviewing.

Out of such research and experimentation should come (1) criteria for the establishment of standards for the selection and training of interviewers; (2) more concrete knowledge concerning techniques and methods of interviewing; (3) a better understanding of the non-verbal factors in interviewing; (4) a study of the personnel functions which employ interviewing as a major tool, such as employee counseling, exit interviewing, employment, etc.; (5) evaluation and testing of former industrial and educational experiments in interviewing processes; (6) a raising of the status of the interviewer more nearly to its deserved position as to requirements, salary, rating, etc.

From more wisdom and skill in handling the interview may well come far-reaching improvement in the emotional and physical health of our citizens, whether they be veterans returning to civilian life, war workers transferring to other jobs or to the home, or students planning their future. Grant us this wisdom.

State and Local Industrial Health Problems

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IT HAD been my first intention to begin this paper with a resumé of the work done by our Commission. In a recent issue of the *Journal of the American Medical Association* a paper appeared which changed my mind and prompted me to start with a discussion of its contents. This paper was written by LT. COLONEL LUETH,[1] presenting results of a questionnaire to Army Medical Officers. Twenty-five per cent of the officers contacted want jobs in industrial health when they return, and 50% of the job-seekers want courses of varying length in industrial medicine. This is an enormous and radical change in the thinking of physicians. Before the war industrial physicans were conspicuous for their scarcity. During the war some Army officers have perforce practiced industrial medicine because that was their assignment, but the general increment of physicians in industry has been very slow. It is startling to discover how much of our war production proceeded without the benefit of sound industrial health practices.

The desires of these physician officers who will return in the now foreseeable future present all of us with two problems. First, we must scan the industrial field for opportunities to place them in the work they want. Secondly, we must be prepared to offer the type and number of courses they have requested. Neither of these problems is new to your Commission.

Presented before meeting of the Blair County Medical Society June 26, 1945, Altoona, Pennsylvania.

They have both been with us for a long time and we have some definite answers ready. We know that the larger industries of this state have already set up medical departments, adequately managed and well staffed. But these *large* medical departments will not offer opportunities to absorb many returning physicians. If you will think for a moment of those industries here that employ 1,000 or more individuals, you will agree with the truth of this conclusion. We also know that industries employing less than 1,000, especially less than 500, are woefully lacking in adequate health services to their personnel. These industries comprise 92% of all business establishments in this state. Obviously here is the field toward which we must look in placing our returning physicians.

Under the auspices of your Commission a great deal of spade work has been done to develop the techniques whereby small industries can provide medical and nursing care in their plants at a cost they can afford. This requires the cooperation of the local county medical society, the local trade organization or chamber of commerce, and the local labor organizations. The work is already successfully going forward in two areas of this state, Philadelphia and Williamsport, and we sincerely hope the example will be generally followed. The details of our procedure have been published by the *Pennsylvania Medical Journal*,[2] by the Council on Industrial Health of the American Medical Association,[3] by the *National Safety News*,[4] and by INDUSTRIAL MEDICINE.[5] They will be further publicized in a forthcoming pamphlet issued by the United States Chamber of Commerce. It cannot be too often repeated that no program for medical service to small industries can be successfully carried out by the medical profession alone. All the other parties in interest must do their share both in consultation and action, but—the medical profession must lead the way.

NOW let us turn to the second problem posed by COLONEL LUETH'S questionnaire—the education of physicians in industrial health. The Medical Society of the State of Pennsylvania established our committee in 1940, and from the first meeting we have been harping on the necessity for such courses in both the undergraduate and post-graduate fields of medical education. Our efforts have been somewhat successful. In 1940, five years ago, a survey showed this situation:

(a) *At the University of Pittsburgh*—a well organized course in the undergraduate curriculum which graduate physicians might attend if they desired.

(b) *In Philadelphia*—

(1) An undergraduate course at the Woman's Medical College—no post-graduate instruction.

(2) A graduate course at the University of Pennsylvania but only sporadic lectures to third and fourth year medical students.

(3) A few lectures to the undergraduates of Temple Medical School but no post-graduate course.

(4) No course of any kind at either Jefferson Medical College, or at Hahnemann Medical College.

In the five years of our existence as a functioning group the picture has changed hearteningly. Temple University Medical School and Hahnemann Medical College have both inaugurated excellent undergraduate courses in industrial medicine for their third year classes. At the University of Pennsylvania the post-graduate course was lengthened to 64 hours and a series of six coordinated lectures was inserted in the third year curriculum. So far there has been no improvement in the situation at Jefferson but we are assured by its dean that the end of the war will signalize the beginning of such instruction to the students there. We will not consider our work completed until all schools within the state offer adequate undergraduate hours and field trips and formal post-graduate courses in the subject of industrial health. We consider it wrong to graduate new physicians into the industrial complex which our nation has become unless they have had proper grounding in the elements of industrial medicine and hygiene.

But the more immediate problem is post-graduate instruction of returning physicians. It would seem to us that the facilities are wholly inadequate as scheduled at present. One course a year is available at the University of Pittsburgh, and one a year at the University of Pennsylvania. Our first endeavor will be to persuade the deans of the rest of our medical schools to make graduate teaching in industrial medicine a part of the curriculum, and to provide more than one course during the school year. If this will not promptly absorb all the returning physician students, or if the medical schools fail to provide facilities, we have another arrow in our quiver. The Allegheny, Lackawanna, Lycoming and Philadelphia County Medical Societies have all had favorable experience in setting up and managing courses in industrial health and hygiene under their own auspices. What has been done once can be done again by the same groups or by others. The teaching was done by volunteers from the various medical school bodies, from our Commission, from the U. S. Public Health Service, and from local talent. We do not yet know how much of all this machinery will be needed when the war ends, but from the straws in the wind we think more teaching will be demanded than is now available. Your Commission knows that this instruction must be provided through the medical schools or by the medical societies of this state. We stand ready to help any county medical society or councilor district to organize this type of course should they find sufficient members who request it. And let us not become so completely grateful to the veteran that we forget the home front physicians, especially the younger men who were not accepted by the armed forces. They are of the same generation as the returning medical officers, and they, too, must have a knowledge of the basic rudiments of industrial medicine and hygiene.

Dale Carnegie wisely counsels his students on the influential magic of knowing and remembering a person's name. The professional and business men of Blair County cannot be won as friends or influenced as people toward the ideas of our Commission unless those ideas can be helpful in the local situation as they find it and have lived with it. In other words, we should know Blair County industrially and professionally and then draw suggestive conclusions.

Geographically you have the perfect strategic position in this state. You are situated at the end of the Juniata River Valley and sit astride the entrance to the corridor through the Allegheny Mountains that leads to the midwestern flat lands. Any military man would promptly conclude that transportation should therefore be your main industry, and the history of this county certainly bears that out. During the canal era, Hollidaysburg was the terminal of the fantastic Portage Railroad, and today Altoona is the hub around which the main line of the Pennsylvania Railroad revolves. Hence, in any industrial survey of this county the railroad shops stand as the largest single field of employment. The principal other types of manufacturing, I find, are paper and printing industries; food, slaughtering and kindred products; textiles and textile products; ganister bricks; and brass,

bronze and copper products. These manufacturing establishments number 154. Besides these there are four bituminous coal mines, 14 banks, 140 wholesale establishments, and 1,852 retail stores. In these various endeavers 48,000 people find gainful employment in Blair County.

The railroad shops employ roughly 12,000, and their medical service is already established. Two thousand more are found in industries whose size may already have influenced management to seek adequate medical service. There remain then 34,000 workers whose medical service at their work must be your major concern, for their companies are too small to maintain an adequate service on their own initiative.

As a rule of experience, one hour of physician's time a week should be allotted for each 100 employees, so that your basic requirement is 340 physician-hours a week. In Blair County there is an average of only 150 physicians, and roughly 25 of them practice a specialty only. You can, therefore, see that 125 physicians must each furnish an average of 2¾ hours a week if full coverage of the minimum needs of these workers is to be afforded. Between this simple formula and the actual accomplishment of only a part of it lies a world of hard work and many disappointments. After years of propaganda by trade associations, small employers are only just *beginning* to provide their workers with the health services that have long been standard accepted practice in large industries. Physicians formerly felt that industrial medicine was declassé, and have only recently realized that industrial health is public health applied to the working place and consequently their job. I have no illusions concerning the difficulties in persuading the small business man or the busy medical practitioner that there are problems in the working place, environmental, mechanical and psychologic which they must solve jointly. But I have great hope that here and there, and in gradually increasing numbers, the small employer and the forward-looking practitioner will see the opportunity and grasp it.

Now let us outline briefly the steps necessary to establish a medical service in a small Blair County industry:

Step No. 1—The Committee on Industrial Health of the Blair County Medical Society contacts the local Chamber of Commerce, suggesting a joint program. At the same time, the Medical Society Committee polls the Society's members as to their interest in and availability for industrial health work. This is a most important step, since it would be the cause of great embarrassment to have an industrialist accept the plan, then find no physician available.

Step No. 2—The Blair County Medical Society requests a survey by the Division of Industrial Hygiene, Pennsylvania Department of Health to ascertain (a) The medical and nursing coverage already existing; (b) The medical and nursing coverage needed; (c) The hazards inherent in the industrial processes found in Blair County.

Step No. 3—In developing the plan, the top executives of the Medical Society and the Chamber of Commerce consult with the district representatives of the Railway Brotherhoods, the CIO and the AFL. Their endorsement will be invaluable in furthering the work.

Step No. 4—With the data in hand from the above steps, the local Chamber of Commerce, through its top executive officer, sends literature and letters to its members, setting forth the advantages of adequate industrial health coverage. Our Commission will willingly provide copy for this material if needed.

Step No. 5—The Chamber of Commerce arranges a meeting of interested industrialists at which they may meet a lay member and a medical member, both well informed in industrial health practice, for a question and answer round table.

Step No. 6—The interested industrialist then invites the two man lay and medical team to a personal conference at his place of business, where his actual needs can be surveyed, a physician suggested and nursing service urged at the same time.

Step No. 7—The physician who is chosen and the industrialist who has sought his services then make personal agreements as to amount of service, time, payment and other responsibilities.

It may be well to remember that small beginnings lead gradually to larger services and that a great deal of good industrial health can emanate from a dispensary of very small area. This Commission and the Council on Industrial Health of the American Medical Association can give data and costs on dispensary size and equipment for any interested persons.

Two points in this schedule need comment:

(a) Nursing care is the same valuable adjunct to industrial medical practice as it is to general medical practice. We calculate two hours of nursing service for every hour of physician's service. Well trained industrial nurses are at a premium, so for this type of work we call on the personnel of the Visiting Nurse Society. In our experience their nurses have done excellently well. One point of danger is arising. Many nurses, lured by regularity of hours, or attractiveness of payment rates, are accepting jobs with industries on their own responsibility. No corporation may practice medicine. Unless nurses are directly, personally responsible to a physician for orders and direction, they are practicing medicine without a license and placing themselves and their employers in jeopardy of claims for damages beyond compensation costs. The medical and nursing organizations of each community need to take steps to correct this situation before an explosion occurs.

(b) Cooperation and active participation must be sought with the community labor organizations. Let us properly translate into action the handwriting on the wall. Mr. John L. Lewis didn't ask for health benefits in his last contract just for the pleasure of it. He knew his membership has a keen and active interest in the effect of occupation on health. The Union Health Centers, maintained by the ILGWU in New York and Philadelphia and the Health Council of the Auto Workers Union in Detroit are indices that labor intends to do more about its health than merely either ask or talk!

I have discussed with you the things our Commission has developed for the long pull. We have laid plans which will take a generation or possibly two generations to come to full fruition. Nevertheless, it is our feeling that we had all better begin this work *now*. The increasing interest of industrialists great and small, the awakened participation of organized labor, and the necessity to intelligently assay and place the returning veteran will require our best skills as physician advisers to industry. This meeting proves that you propose to march with medical progress, and it is our sincere hope that your success from here on in industrial medicine, will be ever increasing.

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Occupational Exposure to Arsenic

—In the Manufacture of Arsphenamine and Related Compounds—

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THERE exists a large body of literature dealing with occupational exposures to inorganic arsenic compounds, especially those used as pigments or for the protection of fruit crops, or those arising from smelting and metal-pickling operations. Poisoning by inorganic compounds of arsenic is an almost classical subject in the standard treatises on toxicology. The organic compounds of arsenic used in the treatment of syphilis have also been the subject of an enormous amount of published study, but their toxic properties have been viewed entirely as complications of therapy. As far as can be determined, there has been only one published study of occupational exposure to these organic arsenical compounds, though their manufacture today is an important industry employing hundreds of persons throughout the world. Myers and Cornwall,[1] in their extensive study of the "normal" arsenic content of the human body and its excreta, mention a group of 14 persons who were employed in an industry where arsphenamine was handled. The authors state: "Some physicians have endeavored to examine the urine of employees in such plants with the idea of establishing the fact that chronic arsenical poisoning was present. . . . There has never been a single case of chronic arsenical poisoning reported in the literature as a result of the manufacture of trivalent arsenicals. In other words, the possibilities are very remote and the probabilities are even more remote. The most satisfactory means of deciding whether a condition of this kind may result is found in the number of cases which may be observed in such plants." The urine in the 14 subjects contained from 0.000 to 0.015 milligrams of arsenic per 100 cc., with a mean content for the group of 0.003 mg. per 100 cc. These values should be compared to the "normal" arsenic values found by various investigators listed in Table I.

Normal Arsenic

THE concept of "normal" arsenic has existed since 1899, when Gautier first demonstrated that small amounts of arsenic can be found in the tissues and excreta of persons in good health who have no history of any major exposure to that mineral. Since arsenic is widely distributed in the soil and may easily contaminate many substances which are used in the production or processing of foods, it is not surprising that small amounts should be present in all normal tissues.

TABLE I.
"NORMAL ARSENIC" VALUES OF URINE LISTED BY VARIOUS AUTHORS

Author	Group Studied	Highest value mg. As_2O_3/100 cc.	Mean value mg. As_2O_3/100 cc.	Chemical Method of Analysis
Künkele (3)	Workers handling inorganic arsenic compounds	0.010	not given	Gutzeit test
Webster (4)	46 public health workers and their families	0.0065	0.014	Gutzeit test
Webster (5)	9 orchard workers eating arsenic-sprayed fruit	0.040	0.020	Gutzeit test
A.M.A. (2)	Not stated	0.070	not stated	Not stated
Fordyce *et al.* (6) also Myers, *et al.* (1)	Miscellaneous clinic patients	0.072	0.046	Marsh test (15)
Schwartz (9)	Miscellaneous workers not exposed to arsenic	0.083	0.012	Gutzeit test

TABLE II.
"NORMAL ARSENIC" VALUES ON RANDOM GROUP OF APPLICANTS

No.	mg. As_2O_3/100 cc. urine	No.	mg. As_2O_3/100 cc. urine
1	0.022	8	0.018
2	0.024	9	0.020
3	0.008	10	0.022
4	0.026	11	0.012
5	0.012	12	0.014
6	0.028	13	0.006
7	0.006	mean of series	0.017

Just where the line may be drawn between "normal," or harmless, amounts of arsenic and amounts which may indicate poisoning is not an easy matter to decide. As long as the arsenic found in any given body is assumed to have been absorbed as an inorganic compound, the answer is fairly simple, but all authorities on the subject agree that the wide use of arsphenamine and its derivatives has complicated the matter to a considerable degree. Whenever the "upper limits of normal" for arsenic in tissues or excreta are stated, the reservation is usually made that much higher values may exist in persons receiving antisyphilitic treatment without necessarily indicating poisoning. Thus, the editors of "Queries and Minor Notes"[2] state: "In general, it appears tenable that any value of arsenic in urine to a peak near 0.7 mg. per liter may be regarded as within normal limits, although possible exception may be taken to this statement. Higher values, up to about 3 mg. may be regarded as representing an intake of arsenic unusual and undesirable *except in connection with arsenical therapy*" (Italics added). In the references, on which Table I is based, the authors either tacitly or explicitly excluded organic arsenic intake in drawing up their standards of normal.

Arsenic determinations made on the pre-employment urine samples of an unselected group of applicants for work at Abbott Laboratories, North Chicago, Illinois, gave the results shown in Table II. Nine of the subjects were women; four were men.

These values appear more uniform than some of those reported by other investigators, and may be used as a rough index of the normal arsenic of this region, as well as a base line by means of which the other urinary arsenic values in this report may be evaluated.

Manufacturing Operations

IN THIS factory, the basic intermediate from which all organic arsenic compounds are manufactured is arsanilic acid:

This is made by heating aniline with ortho-arsenic acid and purifying the resultant crystalline solid. The purification involves large-scale filtrations and crystallizations. The crystals are spun free of mother-liquor in basket centrifuges and are then dried on trays in ovens. The trays are emptied into drums by hand, and in this process considerable fine dust is evolved. Other exposure to airborne arsenical compounds occurs when open tanks are heated to the point of steaming; when the mother-liquor impinges on the housing of the centrifuge to create a light mist of droplets; and when dried material spilled on the floor is scuffed up by the workmen's shoes. Representative air samples showing this contamination are listed in Table III. Cleaning filter presses and digging material out of centrifuge baskets causes the

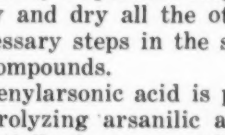
TABLE III.
AIR ARSENIC, CHEMICAL MANUFACTURING DIVISION

Process	Compound	Arsenic (as As_2O_3) mg. per cu. ft.	Arsenic (as As_2O_3) micrograms per liter
Emptying dry powder from trays into drums	arsanilic acid	0.015	0.53
Same location, no work being done	arsanilic acid	0.003	0.11
Centrifugalization and hot filtration of hot solution, taken in escaping steam	arsanilic acid	0.017	0.60
Centrifugalization and hot filtration of solution, not in steam	arsanilic acid	0.003	0.11
General room air, same room as above two samples	arsanilic acid	0.001	0.04
Centrifugalization of hot solution	arsanilic acid	0.002	0.07
Transferring finished powder from drying trays to blender (in hood)	phenarsine hydrochloride	0.008	0.28
Filling bottles from blender (in hood)	phenarsine hydrochloride	0.0005	0.002
Centrifugalization of crystals	4-hydroxy-3-nitro-phenyl arsonic acid	0.003	0.11

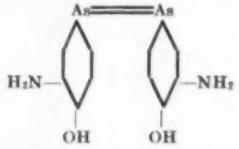
workers' hands and clothes to become soiled with material rich in arsenic, and without careful supervision some of this will naturally be carried into the mouth and thus be absorbed. The dust which settles out of the air accumulates on the exterior of the workmen's hair where it clings tenaciously; therefore, analyses of hair in such workers give extremely high values for arsenic which might be very misleading if the arsenic were assumed to have been deposited within the hair shaft as it grew. Further discussion of this point appears in another section.

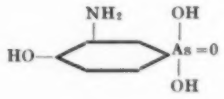
The handling of arsanilic acid is described in some detail because it is typical in every important respect of the methods used to purify and dry all the other intermediates which form necessary steps in the synthesis of useful therapeutic compounds.

The compound 4-hydroxy-phenylarsonic acid is prepared by diazotizing and hydrolyzing arsanilic acid. It is purified and dried by essentially the same methods as those described. It is then nitrated to yield 4-hydroxy-3-nitro-phenylarsonic acid:



This compound, in turn, must be purified and dried by similar methods; it may then be reduced in a variety of ways to yield either arsphenamine base or 4-hydroxy-3-amino-phenylarsonic acid:





The purification and drying of these compounds involves essentially the same types of exposure, although the arsphenamine base is handled under conditions more like those found in a chemical laboratory.

Arsphenamine base may be transformed directly to the hydrochloride (arsphenamine), or may be combined with sodium formaldehyde sulfoxylate to yield neoarsphenamine. It may also be treated with $NaHSO_3$ to produce sulfarsphenamine, which in turn may be combined with potassium bismuth tartrate to give Bismarsen. The hydroxyamino compound may be transformed into phenarsine hydrochloride, acetarsone or Aldarsone by appropriate treatments. These syntheses are carried out on a scale more amenable to ordinary laboratory methods, but the final products must all be handled in the dry form in considerable amounts, and dust is produced with each handling.

TABLE IV.
AIR ARSENIC, PACKAGING DIVISION

Process	Compound	Arsenic (as As_2O_3) mg. per cu. ft.	Arsenic (as As_2O_3) micrograms per liter
Filling 0.6-Gm. ampoules	neoarsphenamine	0.0005	0.018
Filling 0.6-Gm. ampoules	Aldarsone	0.0015	0.053
Sealing ampoules	neoarsphenamine	0.0002	0.007
General room air	neoarsphenamine and Aldarsone	0.0002	0.007
Filling 0.6-Gm. ampoules	neoarsphenamine	0.0018	0.064
Filling 10-Gm. ampoules	neoarsphenamine	0.0008	0.028
Replenishing hopper on filling machine	neoarsphenamine	0.0080	0.28
Cleaning necks of ampoules with swabs	neoarsphenamine	0.0010	0.036
Operating capillary-drawing machine	sulfarsphenamine	0.0001	0.004
Operating capillary-drawing machine	sulfarsphenamine	0.0011	0.039
Sealing ampoules	neoarshpenamine	0.0028	0.099
Sealing ampoules	neoarsphenamine	0.0029	0.10
Filling 0.75-Gm. ampoules	neoarsphenamine	0.0040	0.14
Operating capillary-drawing machine	neoarsphenamine	0.0035	0.12
Filling 3.4-Gm. ampoules	dichlorophenarsine hydrochloride	0.0080	0.28
Filling 3.4-Gm. ampoules	dichlorophenarsine hydrochloride	0.0070	0.25
General room air	dichlorophenarsine hydrochloride	0.0010	0.035
Filling 3.4-Gm. ampoules	dichlorophenarsine hydrochloride	0.0030	0.10
Filling 3.4-Gm. ampoules	dichlorophenarsine hydrochloride	0.0014	0.049
General room air	dichlorophenarsine hydrochloride	0.0002	0.007
Filling 3.4-Gm. ampoules (improved housekeeping)	dichlorophenarsine hydrochloride	0.0010	0.035
Filling 3.4-Gm. ampoules (improved housekeeping)	dichlorophenarsine hydrochloride	0.0011	0.039

The finished products must all be accurately weighed out in therapeutic doses and sealed in appropriate containers. This is done in a separate packaging department with the aid of automatic powder-measuring machines. These disperse a certain amount of the powder into the air; the other sources of dust in this department are broken tubes, spillage, and the scuffing up of settled dust from exposed surfaces. It is necessary to fill and seal the containers in an atmosphere of very low relative humidity because many of the powders are extremely hygroscopic and must be held below strict limits of moisture-content; this requires air-conditioning, which restricts both working space and exhaust ventilation.

Arsenic Content of Inspired Air

AIR samples were collected at various times and places in the vicinity of many of the manufacturing operations described in the preceding section. In the main, the dust was trapped by a M.S.A. midget impinger, using distilled water as the collecting fluid. Air samples of 0.5 to 1.0 cubic feet were obtained, and the arsenic content was determined chemically by a micro-Gutzeit test which is described in a later section. Tables III and IV summarize these observations in the manufacturing and packaging operations respectively.

These figures indicate a wide variation in the arsenic content of inspired air, ranging from 0.0002 to 0.017 milligrams per cubic foot (0.007 to 0.60 micrograms per liter) of arsenic, calculated as As_2O_3. It is interesting to compare these values with the tentative standard set by the American Standards Association.[7] This body has proposed a value of 1.5 mg. of arsenic or arsenic trioxide dust (calculated as As) per 100 cubic meters of air. This would be equivalent to 2.18 mg. (calculated as As_2O_3) per 100 cubic meters, or 0.0218 micrograms per liter. This standard, of course, is a temporary one, and is intended only to apply to inorganic arsenic; no standard for organic arsenical compounds has been proposed.

Urinary Excretion in Exposed Employees

PRELIMINARY study of the arsenic excretion of a few employees in the manufacturing division was begun in 1942. Only those most heavily exposed to dust were selected. Single samples of urine were obtained, wet-ashed, and assayed for arsenic by the Gutzeit method. Some of these subjects were studied again after a lapse of weeks or months. In a few cases, which will be discussed later, urine was obtained when the employees complained of symptoms suggestive of mild arsenic poisoning. These tests continued through 1942 and 1943 into the early months of 1944. The results appear in Table V.

TABLE V.
URINARY ARSENIC IN EMPLOYEES OF MANUFACTURING DEPARTMENT, 1924-1944

Case No.	Date	Mg. As_2O_3/100 cc. of urine
1	4-8-42	0.110
2	4-8-42	0.010
3	4-8-42	0.100
4	4-8-42	0.010
5	4-13-42	0.006
5	4-22-42	0.250
1	4-22-42	0.100
4	4-22-42	0.020
3	4-22-42	0.050
2	4-22-42	0.150
6	5-2-42	0.020
7	5-2-42	0.020
8	5-2-42	0.050
9	1-29-43	0.400
6	1-29-43	0.200
10	1-29-43	0.100
11*	9-22-43	0.500
12*	12-1-43	0.200
13*	12-20-43	0.400
14*	12-22-43	0.100
12	1-8-44	0.040

*Examined because of suggestive symptoms. See case histories in another section.

It is apparent from these figures that the excretion of arsenic in these chemical workers was at a much higher level during the winter of 1943 than during the spring of 1942. It seemed probable that the source of this arsenic was the increased amount of dust caused by greatly increased output during the winter of 1943. A program of dust-control and improved personal hygiene was put into effect, with results which appear in Table VI.

TABLE VI.
URINARY ARSENIC IN EMPLOYEES OF MANUFACTURING DEPARTMENT, 1945

Case No.	Mg. As_2O_3/100 cc. urine.
9	0.090
15	0.060
16	0.070
10	0.050
17	0.020

These values were observed during the same period as the air-sampling tests listed in Table III; air samples were not obtained during the earlier period in this department, when the contamination may be presumed to have been much greater.

In September, 1944, a representative number of employees in the packaging department were requested to furnish single specimens of urine on two consecutive days immediately following the series of air-sampling tests listed in the first 14 items in Table IV. Each sample was assayed separately for arsenic content, with the results which appear in Table VII.

It is interesting to note that the mean of this series is slightly lower than the mean "normal" value obtained on the series of applicants listed in Table II. The extreme range of the two series lies within very nearly the same limits; these packaging department workers are therefore not excreting significally greater amounts of arsenic than the average normal person unexposed.

TABLE VII.
URINARY ARSENIC IN EMPLOYEES OF PACKAGING DIVISION

Case No.	Date	Mg. As_2O_3/100 cc. urine
18	9-27-44	0.005
18	9-28-44	0.005
19	9-27-44	0.013
19	9-28-44	0.008
20	9-27-44	0.003
20	9-28-44	0.022
21	9-27-44	0.003
21	9-28-44	0.005
22	9-27-44	0.022
22	9-28-44	0.016
23	9-27-44	0.018
23	9-28-44	0.020
24	9-27-44	0.006
24	9-28-44	0.022
25	9-27-44	0.009
25	9-28-44	0.007
26	9-27-44	0.037
26	9-28-44	0.026
27	9-27-44	0.025
27	9-28-44	0.016
	mean of series: 0.014	

This is somewhat surprising when a balance is set up between the daily intake and output. The mean of the first 14 air samples in Table IV is 0.0020 mg. per cubic foot. Assuming that sedentary workers of this type breathe 120 cubic feet of air in an eight-hour day, the average amount inhaled would be 0.244 mg. per day. However, if it is assumed that the average volume of urine excreted per day is about 1500 cc., the average daily excretion is only 0.210. When it is recalled that these workers are probably absorbing at least another 0.25 mg. per day from their food (as shown by the "normal" series), one might wonder where all the arsenic is going. The explanation would seem to lie in several facts: (1) Not all the inhaled arsenic is absorbed; some may be discharged with nasal secretions or with sputum. (2) Of the arsenic absorbed, not all is excreted in the urine; Sollman[8] states that only 10 to 20% of injected arsphenamine appears in the urine—the remainder is largely excreted in the feces. The possibility that the missing arsenic is stored in the body seems extremely unlikely in the presence of such low urinary values. A continued positive arsenic balance would soon lead to cumulative effects which would be at once reflected in greater excretion. The most reasonable conclusion from these data appears to be that the arsenic absorbed from the air by these workers is reflected only to a minor extent by urinary arsenic excretion, since no significant increase over normal values can be demonstrated.

In the manufacturing division, similar calculations give:

Average daily intake from air (150 cu. ft. in 8 hr.)	0.900 mg.
Average daily output during same period in urine	0.890
Unaccounted for	0.010
Plus 0.25 mg. from food ("normal")	0.250
Total discrepancy	0.260 mg.

Here, however, a definitely higher mean air-level of arsenic is reflected in a moderately elevated mean value for urinary output, and this seems to indicate that at least a fraction of inhaled arsenic finds its way into the urine, especially at higher levels of exposure. This is in Table V, obtained at a time when dust-control was further supported by the high urinary arsenic values less effective.

Arsenic Content of Hair

IT HAS long been known that inorganic arsenic taken into the body is deposited in the hair and nails, where it may remain for long periods. This fact has

medicolegal importance, and some treatises on toxicology set limits above which the presence of arsenical poisoning may be said to exist. The validity of these limits may be questioned in view of some reports in the literature. Künkele[1] considers 3 micrograms of As_2O_3 per gram of hair to be normal, 5 micrograms to be "a little above normal," 30 micrograms to be "definitely high," 120 micrograms to be "unusually high," and amounts greater than 120 micrograms to be "exceptional cases: taking arsenical treatment, handling arsphenamines, or arsenic eaters." Similar low or moderate levels are indicated in the report of Fordyce, Rosen and Myers,[6] who examined 21 normal persons and were able to find no arsenic in the hair of nine. In four cases with no history of contact with arsenic, values between 0.52 and 1.80 micrograms per gram of hair were found, with a mean value of 0.89. In six persons, all known to handle arsphenamine compounds in their daily work, values from 1.66 to 106, with a mean of 27.1 micrograms per gram, were found. Schwartz,[9] however, in a study of 25 men handling arsenic pigments, found much higher values. They ranged from 4 to 1585 micrograms per gram of scalp hair, with a mean value of 411. The pubic hair contained 18 to 830 micrograms per gram, with a mean value of 275.

In 1942, measurements of arsenic content were made on hair from five employees in the chemical manufacturing division, and the high values caused some surprise. In 1945, similar tests were made on hair from three employees doing the same type of work, and though the results are not as high as those of 1942, they are nevertheless well above those mentioned by all authors except Schwartz. Since all the men from whom hair was taken were in good health at the time, and had no past history which would in any way suggest arsenic poisoning, we believe that most of the arsenic must have been of "external" origin, i.e., it must have been deposited on the hair in the form of dust. Once deposited, it appears to cling with remarkable tenacity, since it resists washing with ether and water. Young and Rice[10] found it impossible to distinguish between arsenic of "internal" and "external" origin in human hair. They found it easy to extract a large percentage of arsenic from hair with appropriate reagents, and also easy to cause hair to absorb arsenic when immersed in arsenical solutions, but could devise no method to distinguish between the arsenic deposited within the hair shaft as it grew and that subsequently absorbed by external application. We therefore must conclude that the large amounts of arsenic found associated with the hair of arsphenamine workers do not indicate systemic absorption of arsenic, as the classical literature of toxicology might lead one to believe. As a consequence, such findings are completely unreliable in the diagnosis of systemic arsenic poisoning in these workers.

TABLE VIII.
ARSENIC CONTENT OF HAIR IN EMPLOYEES OF MANUFACTURING DIVISION

Case No.	Date	As_2O_3, micrograms per gram of washed hair
2	4-22-42	500
1	4-29-42	500
4	4-30-42	300
28	5-15-42	2000
29	5-16-42	500
4	5-29-45	220
30	6-16-45	280
9	6-18-45	400

Clinical Data on Workers

IN 1939, a system of medical records was set up at Abbott Laboratories whereby all visits to the plant medical department were recorded, no matter how trivial the complaint. A very liberal attitude on the part of foremen and supervisors encouraged visits to the medical department; employees were not required to punch in and out for such visits, and thus suffered no financial loss. As a result, the medical department was offered an unusually good opportunity to notice promptly any complaints, however small, which might form the pattern of a consistent syndrome associated with any particular type of work. Through the years, it was noted that if any toxic substance was inadvertently introduced into the factory in such a way as to cause systemic absorption or local irritation of any sort, the symptoms would be observed, correlated and traced down to their source within 24 hours—sometimes within one or two hours. Even when the absorption of the compounds produced delayed symptoms, the source of trouble could usually be located within a few days after such symptoms appeared, because all those affected would report promptly, and the common factor in their recent occupational histories would be readily apparent after a little questioning. Several hitherto undescribed syndromes discovered by these methods have been published elsewhere.[11, 12, 13] It is not contended, as a necessary conclusion to be drawn from this experience, that cases of chronic poisoning must always be discovered, especially if the symptoms were very mild and appeared a long time after exposure. However, we do believe that if any symptoms did appear they would be reported. Having been reported, they would be recorded; consequently, an examination of the medical records of an exposed group of employees would reveal any complaints common to the group. Comparison of the frequency of these complaints in the exposed group with the frequency in an unexposed but otherwise similar group would then show whether or not a definite syndrome were present. Such an analysis is presented in the following section.

Analysis of Common Complaints of Exposed Workers

IN THE packaging department, records of 47 workers, past and present, were available. Of these, 16 had worked less than three months; their records were considered insufficient to reveal any chronic effects and were discarded. This left 31 records, which were tabulated to show the number of years each subject had been employed working with arsenical compounds, the total number of visits to the medical department for any complaint whatever, and the total number of visits prompted by a specific list of symptoms which might have some relationship to subclinical or borderline arsenic poisoning. These symptoms were as follows:

1. Hyperkeratosis (under which was included any complaint of "cracking skin," "thickness and dryness of skin," "skin chapped," "warts," etc.).
2. Gastro-intestinal (including all complaints recorded as "upset stomach," "nausea," "vomiting," "abdominal pain," "loss of appetite," etc., regardless of the cause presumed to operate at the time the record was made).
3. Central Nervous System (including any report of "headache," "dizziness," "fainting," etc.).
4. Optic Nerve (any blurring or diminution of vision, spots before the eyes, etc.). No record showed such complaints.
5. Peripheral Neuritis (including "shooting pains" in extremities not due to trauma, "numbness," "tingling," and any complaint of sudden loss of muscular power).

In tabulating these complaints, the cause presumed to have acted at the time, if indicated on the record, was disregarded unless it had been proved. Thus, many complaints were included which probably had a cause in no way related to the occupational ex-

posure (such as "headache" due to frontal sinusitis, but listed simply as "headache" in the record). As will be seen, this liberal inclusion of symptoms having no causal relationship with the exposure is justified by the use of unexposed control groups which were analyzed in exactly the same manner. The incidence of the symptoms in the control groups is a base-line for evaluating the statistics of the exposed groups.

The control group for comparison with the packaging department records was chosen at random from another packaging department, in which there was no contact with arsenic; in other respects the working hours, duties and materials handled were essentially the same. The mean age and the spread of ages were very nearly the same; both groups consisted solely of young women. The mean length of employment was quite similar, as was the relative proportion of workers presently employed and formerly employed. The control group consisted of 44 records; fourteen of these represented service of less than three months, and were discarded, leaving 30 records to be analyzed by the method previously described.

In the manufacturing department, 35 records were available. All these employees were men, and the spread in ages was much greater, as was the spread in length of service. No records were discarded on account of short length of service, because the only one covering a period of less than three months bore rather conclusive evidence of mild arsenic poisoning. The mean age of this group was greater, as was the mean length of service.

To provide another standard for comparison, use was made of statistics kept in the medical department for the whole plant. These listed all visits to the department, partially broken down as to the nature of the presenting complaint, and were complete for the years 1943 and 1944. They covered 60,924 visits. When combined with the average plant population for those years, these figures gave the over-all number of visits per year per employee for all complaints, as well as a partial break-down including visits for "headache" and for gastrointestinal disorders. These are inserted in Table IX.

TABLE IX.
FREQUENCY OF COMPLAINTS OF VARIOUS WORKER GROUPS

Group	Chemical Mfr.	Packaging	Packaging (Control)	Total Plant
Mean Exposure (or service)—years	2.12	1.60	1.45	
Mean age—years	32.6	25.3	25.4	
Total visits per person per year, all causes	9.6	21.2	10.0	13.0
(a) keratosis	0.23	0.20	0.09	
(b) gastrointestinal	0.32	0.69	0.83	0.54
(c) central nervous system	0.22	0.19	0.76	0.87 ("headache" only)
(d) optic nerve	0	0	0	
(e) peripheral nerve	0.05	0.13	0.02	
(f) all other	8.7	20.8	8.3	

Consideration of the figures in Table IX reveals only three significant differences among the several groups: (1) The members of the packaging department show a markedly larger number of complaints of all kinds. (2) The two groups exposed to arsenical compounds complained considerably more often of the various skin conditions included under the title of "hyperkeratosis." (3) The packaging department group had a much larger number of visits under the heading "peripheral nerve," but this is offset by the lower incidence of such complaints reported by the men of the manufacturing department, who were much more heavily exposed. The incidence of gastric upsets and headaches is lower for both exposed groups than for the control packaging group or the plant as a whole.

In reviewing the records of the packaging department group, a distinct impression was gained that the group was heavily weighted with neurotic individuals. Certain records contained page after page of vague and bizarre complaints unexplained by any physical findings, and these complaints were prone to change daily or weekly. These same individuals were treated for hundred of minor accidents due to broken glass from the ampoules they handled. On the other hand, some other workers in exactly the same environment had practically no illness and comparatively few injuries. These extremes are not apparent in calculating averages for the group, but it is necessary to mention them since they furnish, to us, the most likely explanation for the high visit-rate shown by this group.

We therefore conclude that analysis of the case records does not reveal any consistent pattern of the symptoms commonly associated with chronic arsenic poisoning; this confirms our general clinical impression.

Under conditions of heavy exposure to arsenical dust, certain employees in the manufacturing department displayed symptoms which were suggestive of extremely mild arsenic poisoning; increased urinary arsenic was usually found. Four illustrative cases are described in the next section. In one of these, the symptoms eventually were traced to an entirely different cause.

CASE 11. Male, 48 years old, of Mexican extraction, formerly occupied in a furniture store. Pre-employment physical examination revealed no abnormalities except pigmentation of the skin, poor hearing, and extremely carious teeth. He began work in the arsenical manufacturing department 7-20-43. His visits to the medical department during the next two months were occasioned only by minor injuries. On 9-22-43 he reported that for the past two weeks he had suffered from a pain in the abdomen with loss of appetite. For the past two nights he had been awakened about 2:00 P.M. by the pain. He drank milk one night, and this seemed to relieve the pain for a short time. Examination of the abdomen revealed no rigidity, masses or palpable organs. There was diffuse tenderness over the right side, more marked in the upper quadrant. A tentative diagnosis of peptic ulcer was made, with arsenic poisoning to be ruled out. A sample of urine was obtained for assay. A therapeutic test with magnesium trisilicate emulsion and frequent, small meals was made, but this brought no relief in two days. The urine was found to contain 0.500 milligrams of arsenic per 100 cc. The patient resigned on 9-28-43 and could not be followed further.

CASE 12. White male, 41 years old, formerly an advertising executive. Pre-employment physical examination revealed no abnormalities except for slight obesity and loss of flexibility in the lower back. From 7-26-43 to 8-16-43 he was employed handling aminothiazole, and suffered a moderately severe reaction to that chemical (reported in detail elsewhere).[13] He returned to work 9-20-43, and was employed in the arsenical manufacturing department. From that time on, his visits to the medical department were occasioned only by minor injuries or non-

specific complaints. On 11-11-43, an area of dryness was noted on the back of the right hand. On 11-16-43, he suffered a burn on the right forearm from arsenic acid which he spilled on his skin; this healed. On 11-29-43, he complained of numbness in the fingertips of the right hand with stiffness and inability to close the hands on awakening each morning. On examination, the hands were found to be closed with good strength. The skin on both hands was dry, thickened and cracking. Small red papules were present on the flexor surfaces of both wrists. A diagnosis of chemical dermatitis with possible systemic arsenic poisoning was made. A sample of urine was analyzed, and showed 0.200 milligrams of As_2O_3 per 100 cc. The patient and his foreman were warned that he must not be allowed to absorb arsenic so freely, and on 12-18-43 he took a leave of absence. He returned 1-8-44, bringing a fresh urine sample, and stated he felt well. The second sample of urine contained 0.040 mg. of arsenic per 100 cc.

CASE 13. White male, 43 years old, formerly a laborer, was employed in the arsenical manufacturing department in 11-9-43. Pre-employment examination revealed bilateral inguinal hernias, varicose veins in both legs, partial amputation of left thumb and two fingers, poor distant vision, and slight glycosuria. On 12-16-43, he complained of a skin eruption of the face and forearms; he had been handling dry powdered arsanilic acid. Examination revealed erythema of both wrists and of the face on the area over which the rubber face-piece of the respirator made contact with the skin. Four days later, the dermatitis on the face had improved, but the skin on the back of the right hand was reddened and hyperkeratotic, with one deep fissure. A diagnosis of contact dermatitis with possible systemic poisoning from arsenic was made, and a sample of urine was obtained. It contained 0.300 mg. of arsenic per 100 cc. The foreman was ordered to remove the patient from contact with arsenic, but failed to do so. On 3-2-44, the patient suffered an acute attack of diarrhea, anorexia and weakness, but this quickly disappeared and was considered to be infectious gastroenteritis. On 4-13-44, there was a recurrence of dermatitis on the right forearm, and inquiry revealed that the patient was still handling arsenical compounds. Examination revealed confluent patches of papular dermatitis on the ulnar surface of the right forearm, with a few papules on the back of the hand. A urine sample contained 0.350 mg. of arsenic per 100 cc. The patient was removed from all contact with arsenicals and his dermatitis subsided. It did not recur until 8-12-44, when he was temporarily assigned to handle arsenicals for a short period. Since that time, there has been no recurrence, and no complaint of any symptoms referable to arsenic intoxication.

CASE 14. White male, 25 years old, formerly a machine operator, was employed in the chemical manufacturing department on 2-10-42. Pre-employment examination was essentially negative except for a slight webbing deformity of the toes on both feet. The urine did not contain sugar. He worked chiefly with aminothiazole, and on several occasions suffered dermatitis which was attributed to contact with that chemical. On 8-6-43, he was transferred to work on arsenical compounds, but did not complain of any symptoms until 12-22-43, when he consulted a private physician. The physician inquired of the medical department whether the patient might be absorbing toxic amounts of arsenic, because of the nature of his work. A sample of urine obtained at this time contained 0.100 mg. of arsenic per 100 cc. The physician was informed of this, and of our opinion that this did not constitute an excessive amount. The patient continued in the care of this physician for "stomach trouble" and diabetes. The patient stated he had had diabetes for the past five years to his knowledge, though the urine examination at the time he was employed did not show any glycosuria. On 4-19-44, the patient complained of thickness and cracking of the skin on the right thumb, index, middle and ring fingers. Examination revealed hyperkeratosis in the locations mentioned, and a urine sample was analyzed. It contained 0.100 mg. of arsenic per 100 cc.. The patient was transferred to other work, but continued to be treated by the private physician for "stomach trouble." On 9-20-44, he reported the hyperkeratosis of the fingers was much worse, and examination confirmed this. He was referred to a dermatologist who reported that the condition was due to contact with rubber gloves. The patient discontinued the use of rubber gloves and returned to his former work with arsenicals. The hyperkeratosis promptly disappeared and has not returned since.

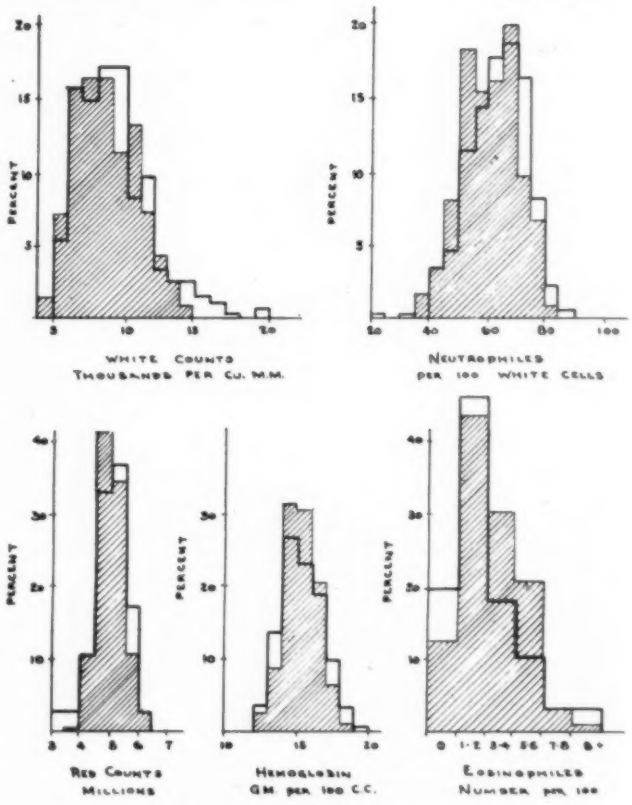


Fig. 1.
Frequency distribution of blood-count data for exposed and unexposed groups. Areas under heavy black lines represent distribution for arsenic-exposed group, 323 counts. Shaded areas under light lines represent unexposed control group, 221 counts

Blood-Count Studies

ONE of the toxic effects of organic arsenical compounds related to arsphenamine, as used in the treatment of syphilis, is their depressive effect upon the bone-marrow in certain cases. By means of a system of routine blood examinations instituted in 1938 and described elsewhere,[16] complete blood-counts on all the 35 arsenical workers in the chemical manufacturing department were available at intervals of three months or less throughout the entire period of their exposure. This made a total of 323 counts. For comparison, a control group of workmen in the chemical manufacturing department was selected at random. These men had no contact with arsenical compounds, but otherwise performed identical tasks. This control group offered a total of 221 complete blood counts.

The frequency-distribution of total white counts, red counts, hemoglobin values, neutrophile counts and eosinophile counts for the exposed and the control groups are shown in the form of nomograms in Fig. 1. There is very little difference between the two groups. The control group, if anything, shows a slight tendency to more leukopenia, lower neutrophile percentage, lower red count, and increased eosinophile percentage. This leads to the conclusion that no statistically significant toxic effect on the bone marrow can be demonstrated in the group exposed to arsenical compounds, at least in comparison to other chemical workers.

Chemical Methods

A. FOR HAIR: One or 2 gm. of hair are placed in a funnel with filter paper and washed with 50 cc. of arsenic-free ether, followed by 100 cc. of distilled water. The sample is dried and an aliquot of 0.5 to 1.0 gm. accurately weighed out and placed in a Kjeldahl flask. To this are added cautiously 20 cc. of concentrated arsenic-free H_2SO_4, and then 40 cc. of concentrated arsenic-free HNO_3. The flask is warmed gently, glass beads are added, and the contents are brought to a boil. (Use a well-ventilated hood.) If the mixture begins to char, or when white fumes fill the flask, more nitric acid is added until the digest is colorless upon being boiled down to the point where white fumes fill the flask. The digest is then cooled, and to it is added a mixture of 25 cc. of Ammonium Oxalate Test Solution, U.S.P., and 75 cc. of distilled water. After being mixed, the contents are again boiled down to the point where white fumes fill the flask. When cool, the contents are transferred to a 50-cc. volumetric flask and diluted up to volume with distilled water. The amount of this solution to be used in the Gutzeit apparatus depends on the amount of arsenic present. As much as 5 cc. or as little as 0.1 cc. may be used. If less than 5 cc. are used, the remaining volume added to the Gutzeit apparatus should be made up with 40% arsenic-free sulfuric acid.

B. FOR URINE: Five cc. of urine are added to a small, long-necked flask or a 250-cc. Erlenmeyer flask. Glass beads are added. Two cc. of arsenic-free concentrated H_2SO_4 are cautiously added, followed by 4 cc. of concentrated arsenic-free HNO_3. The mixture is warmed and brought to a slow boil in a hood, and boiling is continued until white fumes appear. If the residue is deeply colored, additional portions of nitric acid are added and boiling is continued until the residue present when white fumes appear is colorless. After the residue is cool, a mixture consisting of 2.5 cc. of Ammonium Oxalate Test Solution, U.S.P., and 7.5 cc. of distilled water is added. The contents are boiled until white fumes appear. When cool, the residue is transferred to the bottle of the Gutzeit apparatus; and enough distilled water is added to bring the final volue to 5 cc.

C. FOR AIR SAMPLES: The contents of the midget impinger are transferred to a small flask as in B (above). The procedure as directed in B is followed exactly.

D. THE GUTZEIT TEST: The digest from any of the preceding three procedures may be assayed for arsenic in the Gutzeit apparatus, which is fully described in the U.S. Pharmacopoeia.[13] The apparatus used in most of our tests had two scrubbing tubes in series. They were lightly packed with cotton moistened with Lead Acetate Test Solution, U.S.P. The tube holding the test papers had a constriction in its lower portion, by means of which the stream of gas was concentrated on the test paper. The gas-generating bottle was operated in a water bath at 25 to 26°C. Frequent blank determinations were run, especially when new reagents were made up. Frequent standard stains were made.

It was always aimed to select the amount of digest in such a way that the stain on the test paper would be nearly equal in size and intensity to the standard stain, since it is well recognized that the accuracy of the procedure diminishes when stains of greatly differing size are compared. Thus, if the usual portion of digest gave too large a stain, the test would be repeated with a smaller amount.

The procedure was as follows: Add 5 cc. of digest to the Gutzeit bottle. Add 5 cc. of Potassium Iodide Test Solution, U.S.P., and mix. Add 5 cc. of Stannous Chloride Test Solution, U.S.P., and mix. Add 25 cc. of distilled water and mix. Cool to temperature of water bath. Add 1.5 gm. of arsenic-free zinc granules and quickly insert the stopper with the scrubbing tubes and test-paper tube. Allow to stand in the water bath for one hour.

Summary

THE chemical manufacture and packaging of arsphenamine and related compounds are attended by the escape of dust in many different stages. The amount of arsenic in this dust in one pharmaceutical plant was determined by analyzing 31 air samples. Values ranging from 0.0002 to 0.017 milligrams per cu. ft. (0.007 to 0.60 micrograms per liter) of As_2O_3 were found. The mean value for all manufacturing operations was 0.006 mg. per cu. ft. (0.17 micrograms per liter); the mean for the packaging operations was 0.0023 mg. per cu. ft. (0.065 micrograms per liter).

2. The urinary excretion of 17 manufacturing workers and 10 packaging workers was determined on one or more occasions. The values were compared with those obtained in 13 applicants for work (presumably unexposed to any arsenic). The range for manufacturing workers was 0.006 to 0.500 mg. per 100 cc. of urine; mean: 0.059. For packaging workers, range 0.003 to 0.037; mean: 0.014. For normal controls: range 0.003 to 0.028; mean: 0.017.

3. Urinary excretion did not reflect any absorption of organic arsenical dust at the low level of exposure encountered in the packaging department. At higher levels of exposure in the manufacturing department, increased urinary excretion was present, roughly in proportion to the magnitude of the exposure. Only a fraction of the calculated inhaled arsenic could be demonstrated in the urine.

4. Analysis of hair in four manufacturing workers gave values higher than those previously reported in the literature. These values were not accompanied or preceded by any symptoms of arsenic poisoning, or by unusually high arsenic values in the urine. The arsenic is believed to be of external origin (settled dust, etc.), and to have no diagnostic value.

5. Clinical judgment, based on frequent contact with the exposed workers over the entire period of exposure, did not give the impression that any symptoms of arsenic poisoning existed except in a few isolated workers in the manufacturing department during a short period of unusually heavy exposure. This was verified by a detailed analysis of the medical records of 35 manufacturing workers, 31 packaging workers and 30 unexposed controls, in which all complaints which might be attributed to arsenical poisoning were tabulated and compared with similar complaints by unexposed workers.

6. Case reports of three workers showing transitory symptoms of borderline arsenic poisoning are presented.

7. An analysis of 323 periodic complete blood counts in workers exposed to arsenical compounds and 221 counts in unexposed workers doing otherwise similar work revealed no evidence of myelotoxic effect due to arsenicals.

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Factors Contributing to the Excessive Use of Sick Leave

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THE prevention of illness is the cornerstone of the properly conducted industrial health program. In order to approach this problem intelligently it is necessary to acquire as great a knowledge as possible of factors which may contribute to the incidence of ill health. The purpose of this study was to determine the relative importance of various socioeconomic and medical factors which may have resulted in the excessive use of sick leave by a group of female government office workers.

At the United States Bureau of the Census in Suitland, Maryland, sick absenteeism is under the direct control of the Bureau medical officer. All sick leave applications must be approved by him. Employees accumulate at full pay approximately 15 days of sick leave annually. Those who have been away on sick leave one or more days are required to report to the Health Unit in order to determine their fitness to return to work. Those whose records show an excessive amount of sick leave are interviewed and examined at six-month intervals by the medical officer in an effort to institute methods for the correction of medical and environmental conditions which may have resulted in the poor leave records.

A group of 200 employees were selected from approximately 1,200 female office workers who were employed continuously during a six-month period at the Bureau of the Census, Suitland, Maryland. One hundred of these employees had the poorest sick leave records for this period of time; the other hundred had taken no sick leave. All were interviewed by the medical officer and given a brief physical examination. Whenever possible, additional information was obtained from their private physicians.

On the basis of this study a number of socio-economic and medical factors were collected and analyzed for the two groups of employees. Socio-economic factors studied were: Age, education, marital status, size of immediate family, type of living quarters, standard of living, transportation to work, permanence of position, type of occupation, length of present employment, salary, available annual leave, and efficiency rating. Medical factors studied were: Health of the immediate family, daily habits, diet, past medical history, present medical care, number of visits to the Bureau Health Unit, analysis of the causes of absences due to illness, incidence of mental conflicts and the findings of the physical examination.

Analysis of Findings

EMPLOYEES who took excessive sick leave will be referred to as Group A. Those who took no sick leave will be referred to as Group B. The average age of employees in Group A was 32.8 years and of those in Group B 42.5 years. Only 22 of the hundred employees in Group A were 40 years or older, whereas 59 in Group B were within this age group (Table 1).

TABLE 1.

Age Group (years)	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
15 - 19	6	3
20 - 24	20	5
25 - 29	18	9
30 - 34	15	14
35 - 39	19	10
40 - 44	9	12
45 - 49	5	17
50 - 54	5	9
55 - 59	1	11
60 - 64	1	4
65 - 69	1	5
70 - 74	—	1

There were an appreciably greater number of married women in Group A (53%) than in Group B (34%) (Table 2).

TABLE 2.

Marital Status	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Single	33	51
Married	53	34
Divorced, Widowed or Separated	14	15

Both the educational qualifications and the standards of living of employees were somewhat lower in Group A than in Group B (Tables 3 and 4). There were no apparent important differences between employees in the two groups as to size of family, type of living quarters, or transportation facilities. Factors

TABLE 3.

Education*	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Grammar School	6 (2)	4 (1)
High School	75 (28)	57 (17)
College	19 (13)	39 (24)
Business School	22 (14)	31 (16)

*Figures in parentheses refer to employees who did not complete courses.

TABLE 4.

Standard of Living*	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Comfortable	50	62
Adequate	44	36
Inadequate	6	2

*Employees' own evaluation.

which showed differences in the two groups were permanence of position (Table 5), type of occupation (Table 6), length of present employment (Table 7), basic salary (Table 8), available annual leave (Table 9), and efficiency rating (Table 10). As an example, the average basic salary of employees in Group A was $1,706 per year in contrast to an average basic salary of $2,502 per year of those in Group B. This difference

TABLE 5.

Position Status	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Permanent	7	37
Temporary	93	63

TABLE 6.

Type of Occupation	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Supervisory	8	22
Secretarial	4	9
Clerical (including typists)	60	68
Machine Tabulators	28	1

TABLE 7.

Length of Present Employment (months)	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
6 - 11	10	4
12 - 23	36	19
24 - 35	6	4
36 - 47	37	32
48 and over	11	41

TABLE 8.

Basic Salary* (Does not include 20 per cent overtime pay)	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Less than $1620	20 (10)	8 (3)
$1620—$1799	52 (17)	21 (5)
$1800—$2299	25 (8)	48 (14)
$2300 and above	3 (0)	23 (5)

*Figures in parentheses refer to employees whose husbands are employed.

TABLE 9.

Available Annual Leave (days)	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Less than 1	9	2
1 - 9	58	14
10 and over	33	84

TABLE 10.

Efficiency Rating	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Excellent	17	43
Very Good	69	48
Good	14	9

corresponded with the difference in the average length of employment between the two groups. Employees in Group A, had served an average of 2.7 years while the average for Group B was 7.8 years.

A study of medical factors disclosed a greater incidence of parental illness in Group A (Table 11). This finding was somewhat obscured by the fact that employees in Group A were younger than those in Group B. However, when the age factor was eliminated by selective matching it was found that 23% of the parents of employees in Group A were chronically ill at the time of this study as compared with 8% in Group B.

Health habits were generally better for employees in Group B. This difference was evident in the number of hours of sleep, the number of meals, and the number of cigarettes smoked daily (Table 12). Similarly, the diet of employees in Group A was not usually as adequate in the accepted standards of nutritional requirements as the diets in Group B.

The greater incidence of illness suffered by employees in Group A as comparable to Group B was particularly evident in the number of serious adult illnesses (Table 13), the extent of active medical care (Table 14), and the number of visits to the Bureau Health Unit (Table 15). Of interest was the finding of a larger number of employees in Group A who could be considered more accident-prone than the usual employee. This was revealed by a history of previous serious injuries involving bone fractures (Table 13).

TABLE 11.

Present Heath of Parents	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Mother:		
Well	54	45
Ill	20	4
Dead	26	51
Father:		
Well	47	31
Ill	12	3
Dead	41	66

TABLE 12.

Daily Habits	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Sleep (hours):		
6	20	13
7	30	29
8	42	45
9	8	13
Meals:		
2	33	18
3	67	82
Cigarettes Smoked:		
None	57	87
1 - 9	15	4
10 - 19	19	7
20 and over	9	2
Recreation:*		
Adequate	53	60
Inadequate	48	40

*Employees' own evaluation.

TABLE 13.

Medical History	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Serious Adult Illnesses* (since age of 20):		
Yes	54	33
No	46	67
Operations:**		
None	65	71
1	19	20
2	8	7
3 and over	8	2
Serious Injuries (involving fractures):		
Yes	21	6
No	79	94

*Confined to bed seven days or longer.
**Not included are tonsillectomies in 38 of the employees with excessive sick leave, and 46 of the employees with no sick leave

TABLE 14.

Present Medical Care	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Under Continual Care of Physician at Present:		
Yes	40	4
No	60	96
Medication at Present:		
No medication	37	72
Physician's prescription	28	3
Vitamins (self-medication)	12	19
Laxatives (self-medication)		
Daily	7	4
Once a Week	11	7
Once a Month	5	4

TABLE 15.

Health Unit Visits (six-month period)	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
None	13	55
1 - 4	45	40
5 - 9	31	5
10 and over	11	—

TABLE 16.

Sick Leave Absences (six-month period)	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Number of absences:		
5	22	—
6	37	—
7	10	—
8	12	—
9	7	—
10	2	—
Total Days Lost for all Absences:		
5 - 9	43	—
10 - 14	31	—
15 - 19	17	—
20 and over	9	—
Average Days Lost per Absence:		
Less than 2	63	—
2 - 2.9	27	—
3 - 3.9	4	—
4 and over	6	—

Analysis of the sick leave absences of employees in Group A disclosed that such absences were in large part due to short-term illnesses. Ninety per cent of these absences were less than three days in duration (Table 16). Approximately 40% of the illnesses were self-diagnosed as upper respiratory tract diseases, 17% as diseases of the gastro-intestinal tract, and 15% as dysmenorrhea (Table 17).

TABLE 17.

Cause of Absences (self-diagnosed) (six-month period)	Employees Taking Excessive Sick Leave (number) (Group A)	Employees Taking No Sick Leave (number) (Group B)
Respiratory diseases	268	—
Digestive diseases	112	—
Dysmenorrhea	99	—
Headache, fatigue or nervousness	69	—
Injury sustained off duty	23	—
Eye, ear, nose and throat diseases	19	—
Dental	19	—
Neuritis, arthritis or myalgia	12	—
Skin	8	—
Pregnancy	7	—
Injury sustained on duty	5	—
Cardiac diseases	3	—
Total Absences	644	—

A study of symptomatology in the two groups of employees showed interesting differences in several respects. Thus, 32 women in Group A complained of constant "nervousness," 54 of frequent headaches in comparison with four and 13 respectively in Group B. Of interest was the finding that whereas 14 employees in both groups admitted chronic conflicts in their working environment, 23 employees in Group A and only six employees in Group B were harassed by similar difficulties at home. Sixty-two women in Group A suffered from various gastro-intestinal complaints in comparison with five in Group B. Constipation was more frequent among employees in Group A. Gynecologic complaints were prevalent in this group. Four complained of amenorrhea, 49 of dysmenorrhea, 10 of menorrhagia, nine of metrorrhagia, and five of menopausal symptoms in comparison with none, two, one, two, and four, respectively, in Group B. However, 38 women in Group B were post-menopausal in comparison with eight in Group A.

There were a greater number of physical abnormalities in Group A than in Group B. Fifteen employees in Group A were underweight and 21 were overweight as compared to four and nine, respectively, in Group B. Chronic sinusitis of varying degrees of severity was noted in 21 employees in Group A and in seven in Group B. Twenty employees in Group A and four in Group B were found to have marked dental caries. Badly infected tonsils were found in eight employees in Group A and none in Group B. Enlarged but non-toxic thyroid glands were found in three employees in Group A and none in Group B. Chronic otitis media was noted in four employees in Group A, and in two in Group B. Five employees in Group A and one in Group B were suffering from chronic bronchitis. Cardiac hypertrophy was noted in two employees in each of the groups; cardiac decompensation in one employee in each of the groups. Compensated mitral stenosis was found in three employees in Group A and in none in Group B. Systolic apical murmurs without other cardiac findings were noted in seven employees in each group; a systolic pulmonic murmur was detected in one employee in Group A. Elevated systolic blood pressure was noted in 11 employees in Group A and in 22 in Group B, and elevated diastolic pressure in nine employees in Group A and 17 in Group B. Evidence of chronic cholecystitis was noted in two employees in each of the groups. Routine gynecologic examinations were not done in either group, but examinations made by private physicians disclosed fibroid tumors in three employees, uterine retroversion in four, ovarian cysts in five, and chronic cervicitis in four in Group A. No corresponding findings were reported in Group B. Three employees were pregnant in Group A and none in Group B. Hemorrhoids were noted in three employees in Group A and two in Group B. Two employees in Group A were suffering from chronic cystitis and one was similarly affected in Group B. Chronic osteomyelitis occurred in one employee in Group A, in none in Group B. Chronic arthritis was noted in five employees in each group. Severe varicosities of the legs were found in one employee in each group. Two employees had chronic acne, two were suffering from chronic eczema, and one was suffering from psoriasis in Group A. There were no corresponding cases in Group B. Evidence of pituitary dysfunction was noted in two employees in Group A. One employee in Group A was suffering from Meniere's disease. None in Group B was similarly affected. Three employees in Group A had hemoglobin values of less than 70% (Sahli). No corresponding cases of anemia were found in Group B. The average hemoglobin of employees in Group A was 80.4%, and in Group B was 82.9% as determined by the Sahli method.

Summary

A COMPARATIVE study of important socioeconomic and medical factors in the lives of 100 female office workers who had records of excessive sick leave during a six-month period, and of 100 female office workers who took no sick leave during the same period of time revealed interesting differences between the two groups. The group which took excessive sick leave was made up of a greater number of more recently employed women whose salaries were lower and whose government positions carried little or no responsibility. There were comparatively few employees in this group who had received excellent efficiency ratings. In general, they were young, married, and assumed a considerable amount of domestic responsibility in addition to their job. The records showed that both sick leave and annual leave were used to excess by this group. It is difficult to estimate the number of absences allegedly due to illness, and actually due to other undisclosed personal factors. However, 30 to 40% of sick leave absences were suspected to be taken for personal reasons or very mild illnesses since the number of sick leave absences dropped that percentage on paydays.

There were indications that a large number of employees who had excessive sick leave records were suffering from suboptimal health. The health habits of these employees were often harmful and their diets

were frequently deficient. Physical examination disclosed a large number of uncorrected defects.

On the other hand, a large number of the employees who had taken no sick leave had a long period of service at the Bureau and were receiving fairly high salaries. They generally held responsible positions in the organization. Their efficiency ratings were of uniformly high level. Included in this group were many unmarried older women whose domestic responsibilities were negligible. On the basis of their medical history and the findings of their physical examination the employees in this group were generally in good health and tended to observe good health habits.

Conclusion

A STUDY of 100 government female office workers who took excessive sick leave during a six-month period and a control group of 100 who took no sick leave during the same period of time revealed important and interesting socioeconomic and medical differences between the two groups.

Rehabilitation of the Blind

EDWARD M. FEIMAN, M.D.,
Medical Director,
The Timken Roller Bearing Company,
Canton, Ohio

THERE has been more written in medical literature and less accomplished in regard to the study of adapting physically handicapped persons to industrial work than almost any other subject. The great majority of physically handicapped employees have been grateful for the opportunity to perform remunerative work. In many instances it presents the first gainful employment they have had in many years. This holds true, especially, with the blind, who in the past were completely eliminated from industry.

In the manufacturing of Timken tapered roller bearings it is essential that the diameter of the various parts for anti-friction bearings be ground to within very fine dimensions of the specified sizes. All parts of the bearings are checked in the final inspection department, where the operators use precision gauges with electrical or mechanical dial type indicators which show highly amplified readings of any variations in the diameter of the piece being checked to the point which can be measured to one twenty-five millionth (.000025) of an inch, which is equivalent to one-eightieth the diameter of the human hair.

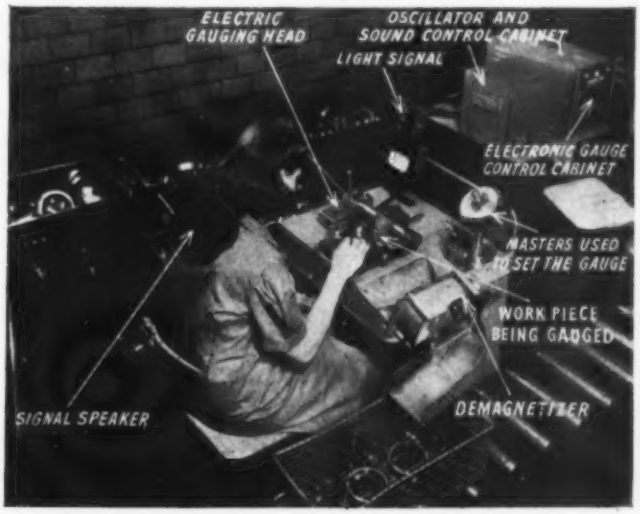
Those parts falling over and under the specified size limit are detected and removed by means of an electronic device. To enable a blind operator to complete this very fine inspection with the same accuracy as a seeing operator, who observes this type of inspection by a switch presenting three different colors —red for rejection, green for pass, and amber for reinspection, the research department of The Timken Roller Bearing Company has invented a sound detector to be used on the same gauge. This sound detector is used with three different notes in a small cone-type speaker mounted on the back of the chair of the blind operator. A piece of work that is normal or within the limit of size, even to one twenty-five millionth (.000025) of an inch, is indicated by the middle note. A high note indicates oversize and a low note indicates undersize of the inspection work. These three notes are produced by a simple electronic oscillator controlled by relays connected to the indicator lights of the electronic gauging system used.

By means of this apparatus the research department has made it possible for the blind to see and complete inspection work within one twenty-five millionth (.000025) of an inch, by means of their ears. This apparatus is available to any industry that is willing to employ blind for the inspection of work down as close as one twenty-five millionth (.000025) of an inch, without any rights or royalties. But this can only be used for the occupation of the blind.

Sylvester Pfendler, blind employee of the Timken Roller Bearing Company, Canton, Ohio, gauges the outside diameter of roller bearing cups by means of the new electronic sound device developed by Timken engineers over a period of two years, while visiting Sergeant Robert McFarrin, former employee on furlough, looks on

In addition to this method of inspection developed by the research department, blind employees perform sound tests, which are the final inspection of the assembled bearings, for smooth and noiseless operation. This is purely a "hearing" check-up. File testing is another job accomplished by the blind, where each cup and cone is tested for hardness by use of a file. The blind operator differentiates by "feel" as to the hardness or softness of steel for rejection or pass.

It has been found that the blind employees can perform about 80% as efficient work as the regular employee, and the results observed are gratifying to those instrumental in the rehabilitation of the blind by developing new methods.



New precision sound gauging device developed by the Timken Roller Bearing Company, Canton, Ohio, for blind operators

Industrial Medicine
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Freedom of the Press

At the top of page 629 of this issue of Industrial Medicine there are the following words: "The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed, but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same, in the current or any subsequent issues, as they may be inclined." Since January, 1936, these words have occupied the same position on the first reader page of every issue of this publication. They are not as detailed nor perhaps as emphatic as similar statements in some other publications, but we have heretofore felt that they were sufficiently comprehensive. Meanwhile, "time marches on," and the rapid and tremendous progress of industrial medicine is developing methods and techniques under circumstances which are sometimes rather strenuous and often, perhaps, temporarily responsive to the exigencies of wartime situations. Some of these things that are now in the making are prolific sources of differences of opinion, argument and controversy. In view of the fact that the phrase, "expression is allowed," has appeared for so many years in the above-mentioned statement of our editorial policy, we believe that such present-day conditions and our relation to them might be well served by some comment on what we mean by "allowed." The scope of our coverage of the field of industrial medicine involves publication of everything that pertains to that field. This embraces all we can learn of what men in the field are doing, what they are saying, and what they are thinking. It is inclusive of news, comment, opinion, controversy and criticism. In every kind of endeavor the appearance of controversy and criticism is indicative of life and growth; when these don't exist, the field has gone stale. And no publication that is itself alive to its field and growing in its usefulness will exclude any such evidences of life and growth from its columns. The term, "allowed," therefore, with regard to anything pertaining to our field which the editors think will be sufficiently interesting to our readers to warrant publication, does not mean that we shall fail or refuse to print it merely on the ground that it is critical or controversial. Our first and governing consideration is reader interest. That is as it should be, and "allowed" as we use it is merely a way of saying that the editors have complete and unhampered discretion. We realize, of course, that such a policy is, on occasion, likely to be misunderstood. For example, the advocates of one side of a controversial matter may feel inclined to a measure of satisfaction, or believe they have invoked official approval, from the fact of the publication of their view of the matter, while at the same time the advocates of the other side take umbrage at the idea that the publication is carrying the torch for their opponents. For that reason, among others—and particularly in view of certain controversies which we know are coming up for the edification of our readers in early issues—we take this occasion to say, with what we hope will be *permanent emphasis*, that the appearance of any article, or expression of opinion, or comment in Industrial Medicine does not mean that either the editors or the Associations for which Industrial Medicine is the official journal necessarily approve of the article or the point of view of the writer. Nor does such appearance in these columns indicate any sponsorship or official cognizance on the part of any of the Associations unless such sponsorship or official character is definitely and positively indicated. It is no function of a publication which purports to represent its field to take sides in any issues within the field. It is the part, however, of such a publication to cover the field, and that is what we are endeavoring to do. When, in the discretion of the editors, this requires the presentation of both sides of a controversy, both sides will be presented. And when—also in the discretion of the editors—it requires the exclusion of matters that ought not to be published here, such will be excluded. Meanwhile, the opinions of the editors and the things which are definitely sponsored by the magazine, and therefore by its Associations, are and will be confined to the editorial columns unless there is a specific statement of sponsorship elsewhere in the issue.

Passing the Buck

Among Fred Vinson's last official acts as Director of the Office of Mobilization and Reconversion was the submission to the President and Congress of his quarterly report dated June 30, 1945, and entitled, "The Road to Tokyo and Beyond." The report has 10 sections, one of which is devoted to food. The food section starts off, "The tight situation that we face today in food is attributable to four major factors," and the fourth of these "major factors" is as follows: "The United States ate too much in 1944 and the first half of 1945; at one time it appeared that surpluses of some foods might develop, hence allocations to consumers were increased beyond what subsequent production justified." In the first half of the sentence the

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people are blamed; in the second half the trouble is acknowledged to be with the "allocations to consumers." In view of these facts as they have long been known, the second half of the sentence is enough. The all-wise planners went wrong. This is admitted; it couldn't be denied. Why, then, the other part, the gratuitous slap at the people? Such clumsy attempts to "save face" have become bureau habits. All of them in general, and this one in particular, would be comic if they were not so characteristic of government agencies. Imagination, carrying the logic of such buck passing to its ultimate, has no trouble at all in reading from a future report of the Washington bureau set up to handle the proposed compulsory health insurance that the people are no healthier, and the expenditures are vastly in excess of expectations, because "the United States was too sick in 1950 and the first half of 1951." Seriously, however, this may not be altogether imagination, for the United States on the whole already is suffering from one of the symptoms of bureaucratic infestation, to-wit, a considerable headache. The first half of the above-quoted sentence was unfortunate, to say the least. Having been deeply impressed heretofore by Judge Vinson's reputation for judicial fairness, we are reluctant to believe that those are his words. In so far as they are his, however, and to whatever extent they constitute or even appear to involve an effort on his part to excuse the officials and blame the people, by just so much do they debase the pure metal of Judge Vinson's growing stature as a statesman by the dubious alloy of his having been a true-to-form bureaucrat.

DR. PILGRIM

VARIOUS trips, to Pennsylvania and to Michigan, with travel difficulties no whit abated, though as to each one could truly say, "This trip is necessary" . . . CONFERRING with DR. WM. O'NEILL SHERMAN and DR. RICHARD BENNETT with respect to medical services in the steel industry and various other problems, including consideration of future relationships as to community agencies, labor relations, and technical procedures. . . . DULY impressed with editorials in the recent Industrial Health Number of the *Journal of the American Medical Association*, particularly with the principle that returning veterans should be assessed in terms of their capacities rather than in terms of disabilities, which, it occurs to Pilgrim, is one of the most important pronouncements ever made with respect to disabled persons. . . . DELIGHTED again to hear Percy Grainger at the Grant Park Concert in the immortal Grieg Concerto, of which he is a modern master, and also directing the orchestra in some of his own compositions, the same being altogether a delightful occasion, and reminding that Percy played with the Chicago Business Men's Symphony Orchestra in concert several years ago, using the same numbers. . . . THEN on a downstate job with reference to a legal case in a heavy industry shop, it appearing the claimant with considerable disability, while yet much doubt as to the type of exposure capable of producing such effects. . . . AND by way of recreation, sailing with LLOYD BAILEY and DR. C. K. BARNES on the *Monsoon*, this being a trim and speedy craft, and altogether enjoying the relaxation attendant upon good converse, weather, and the friendliness of Nature. . . . THEN to Pittsburgh where contacts with DRS. T. LYLE HAZLETT, DUDLEY IRWIN, WM. O'NEILL SHERMAN, and MESSRS. C. W. PUNTON, H. J. GRIFFITH, G. M. THURSBY, EUGENE RUCH, A. L. WATSON, W. L. C. HEMEON, and JOHN MCMAHON, anent the securing of data on industrial health services, and visiting BILL YANT in his well equipped research laboratory, wherein viewing with wonder the intricacies and complexities of the electron microscope, and seeing recently-made devices for the scientific measurement of oxygen, carbon monoxide and other gases. And much interest in finding the following notice on a prominent hotel menu in Pittsburgh: "Attention Veterans and Servicemen—The Veterans Information Center is located directly across the street at 444 Oliver Avenue. There you can get the answers to any of your questions and problems," thereby being reminded of the old song, "Everybody's Doing It." And amused at a notice printed on another restaurant menu: "A Glass of Water—a la King—A simple gesture, a fresh, sterile glass filled with brilliantly clear water, carefully placed at your right hand (as though you were a King) even before you have selected your entree—" and after reading same to wait until the middle of the meal for the long-looked-for glass of water. . . . AFTER which, inspection of a heavy industry plant on the south side of Chicago, and conference with industrial officials, engineers, and physicians, and being greatly impressed with the extensive health and medical care that is provided for the 400 employees of this plant, and also with the attitude of the physician who constantly uses specialists in various lines to supplement the service. . . . AND then the problem of using coal tar pitch in forms of primer and enamel for the coating of steel pipes, and conferences with engineers and sales representatives of suppliers to work out this problem. . . . WHEREFROM to special examinations on alleged occupational disease cases, and in the laboratory with many problems, including lead, welding, dust, and others, and going over BERT HANMAN'S well-conceived plans and brilliantly executed activities with regard to the placement of disabled in the 12th Naval District in California, and also the preparation of further material on this subject in the form of a handbook for "matching the physical characteristics of workers and jobs," in which matter a committee of critics has been formed representing all types of agencies, including government, industry, education, and others, with widely scattered geographical locations. . . . AND interested in following the conference of the Big Three at Potsdam, finding it of more than usual interest to note that President Truman played Beethoven's "Minuet in G," for which he was heartily applauded; and then Sgt. Eugene List played Chopin's A-Flat Polonaise, Tschaikowsky's piano concerto and three preludes from Shostakovitch, for which he was congratulated and toasted by Premier Stalin, after which he played Russian and American folk music, Mr. Churchill requesting "The Missouri Waltz"—wherefrom it is truly said that music is the universal language. . . . AND studying the excellent exhibit and presentation of the Bausch & Lomb Industrial Vision Service, with which is included material on the Purdue Industrial Vision Institute, testing methods, standards, reporting, rehabilitation, maintenance, safety, job analysis, industrial relations and general testing. . . . WHENCE to Florida, in July, for consideration of problems of welding in a war materiel plant, from which certain observations to appear in subsequent notes.

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The Dermatologist

—And the Industrial Accident Board—

JOHN GODWIN DOWNING, M.D.,
Professor of Dermatology,
Boston University School of Medicine, and
Professor of Dermatology and Syphilology,
Tufts College Medical School,
Boston

CUTANEOUS eruptions from occupation have been known from antiquity. Dairy men and those coming in contact with cattle suffered from the same infections as are known today; those engaged in construction and similar occupations were affected just as are the present-day builders and artisans. As early as 1690 Ramazzini described the occupational ills of workers in all fields so completely that one would believe he was viewing the the present-day hazards involved in industry in World War II.

Conscientious employers have always tried to care for and recompense workers injured in their employ. However, there was a sufficient number of negligent employers to necessitate legislation to compel them to give adequate care and compensation to the injured toiler. Laws were first passed in European countries, and later adopted in the United States. In Massachusetts the compensation law went into effect July 1, 1912. Under the Massachusetts Workmen's Compensation Act an employee is entitled to compensation for any incapacity resulting from a personal injury arising out of and in the course of his employment. Personal injury means that there must be a lesion traceable to a happening in the employment and arising out of it. When it is apparent to the insurer that an employee was injured at his work, compensation is readily paid. However, there will always exist disputed cases, which in Massachusetts are decided by an Industrial Accident Board.

Definition

IN MASSACHUSETTS seven lay members comprise the Industrial Accident Board. It has been frequently proposed that these Boards should consist of physicians, but persons favoring this idea do not realize the large number of cases that are judged by physicians, especially dermatologists in view of the fact that cutaneous disease comprises at least 70% of all occupational disease.

It might be asked "What is a dermatologist?" According to the requirements of the American Board of Dermatology and Syphilology the dermatologist must be a man of high ethical and professional standing; a graduate of a recognized medical school; have completed one year's internship in an approved hospital, be licensed to practice medicine, and be a member of the American Medical Association. In addition to these general requirements, he must have an adequate training in dermatology and syphilology as a specialty. This training consists of a full three-years' course in dermatology and syphilology in an acceptable institution. Having completed this course he then must practice in his specialty for two years before he is entitled to take an examination which will certify him as a Diplomate of the American Board of Dermatology and Syphilology. I do not believe any man should qualify as an expert in dermatology and syphilology unless he is able to meet these requirements. However, at the present time we have an insufficient number of such men in the United States, only 710, and therefore it will be necessary for the various boards and commissions and courts to recognize men who are spending the majority of their time in this specialty. There is no excuse at the present time for the younger man not becoming a Diplomate. However, in this busy era we can realize that the older man hesitates to spend the time studying and reviewing the subjects necessary to pass such a strict examination.

Disputed cases are heard by a single member of the Board. However, an appeal from his decision may be made

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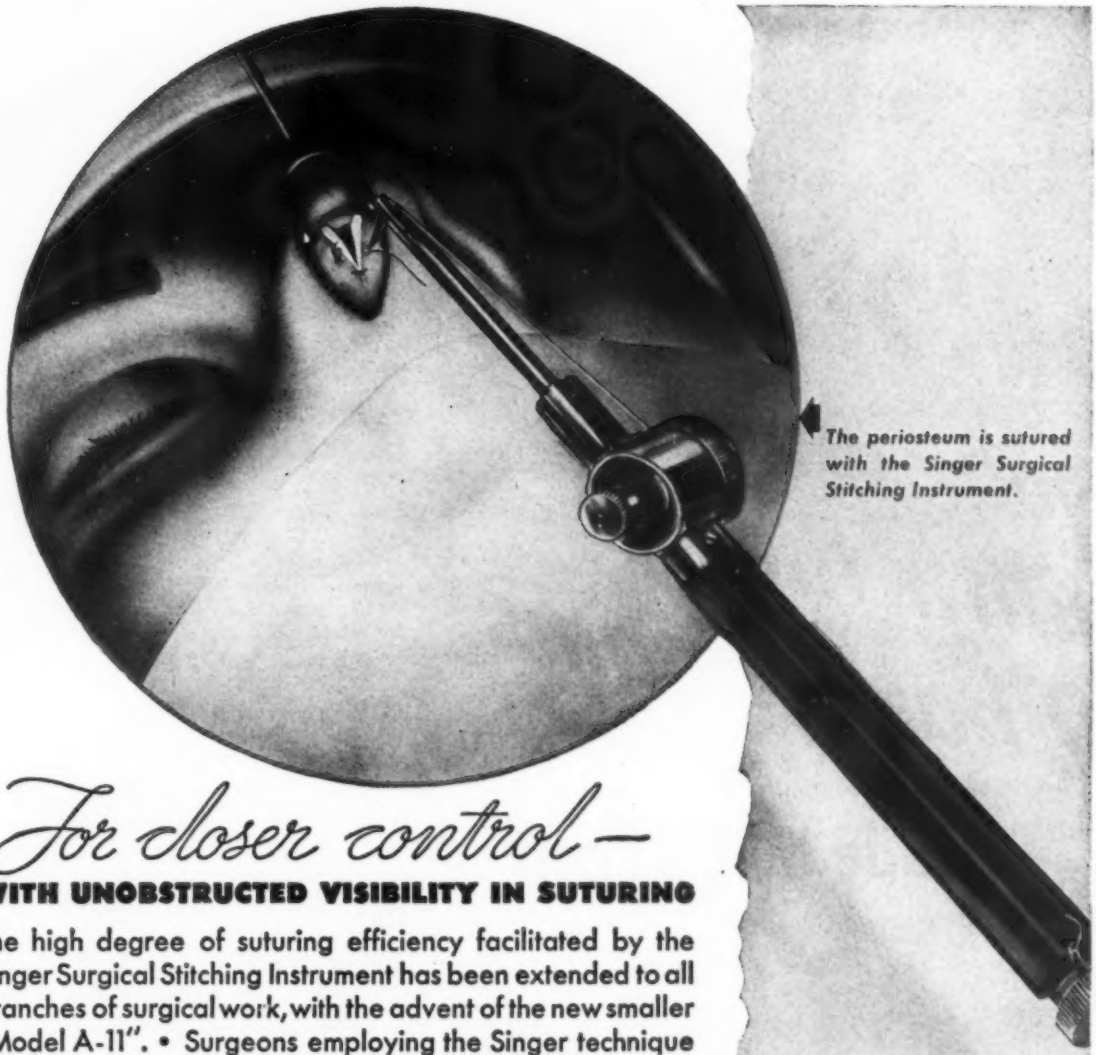
by either party within seven days for a review by the full Board. They may revise this decision or refer it back to him for further findings or facts. An appeal may be taken from these findings to the Superior Court, and in turn to the Supreme Judicial Court. However, these appeals must be based on questions of law and not on questions of fact.

Hearings at the Board, although they follow the usual legal procedure, are somewhat informal. The witnesses testify under oath; physicians are duly qualified and questioned by both parties. If the plaintiff has no lawyer, the Commissioner assumes the role on his behalf. The credibility of the witness is evaluated; working conditions and labor problems are carefully considered. Instead of answering questions by the accepted "yes" or "no" or "I don't know," explanations of medical aspects are encouraged and listened to by the Commissioner, so that he or she rapidly acquires a fair knowledge of medical problems. When medical experts disagree the patient is referred to an impartial examiner whose report does not have to be accepted by the Board, insurer, or employer. However, it does carry considerable weight in the final disposition of the case. In 1935 the Massachusetts legislature adopted an amendment to permit a claim of industrial disease to be referred to three impartial physicians. They are allowed to examine the patient, study medical records, and investigate working conditions as they deem necessary, and report to the department their diagnosis and opinion as to the cause and extent of incapacity, if any. The report shall be made by the majority vote of the referees. The diagnosis should be positive—that is, specify a disease or condition found, or specify that no disease is found. Their diagnosis is binding and final, but the board member can base his decision on previous history or subsequent facts. The constitutionality of this statute has been debated extensively, but, until a ruling by the Supreme Court declares it to be invalid, the Board which administers the Workmen's Compensation Act must follow it. There is no doubt that this prevents an employee from having a complete or full trial on his claim of industrial disease where the Industrial Accident Board appoints the three doctors. On the other hand, it saves him the expense of employing one or more experts to testify in a questionable case.

Dermatologists, in caring for the public who are exposed to occupational hazards and traumatic injuries, as well as to systemic diseases, owe to their patients the duty not only to be equipped with medical knowledge and ability, but also to be ready and capable of testifying in the patient's behalf. Specialists are frequently called to testify before the courts and industrial commissions. The doctor who attends the injured for his occupational or traumatic eruption is the one who is most important before an Industrial Accident Board, jury, or other tribunal charged with the responsibility of deciding causal relationship or assessing damages. If he refuses to go before these boards and submit himself to legal questioning and cross-examination he is not rendering full service to his patients. Some knowledge of courts and their procedure, and perhaps general rules of law, is therefore essential. He should be able to make a careful analysis of the component parts of claims for compensation for occupational dermatoses. This should include consideration of all problems related to the differential diagnoses as between the cutaneous disease arising from natural causes and that due to occupational hazards. This may necessitate considerable research in addition to a thorough physical examination, extensive laboratory work, thorough knowledge of the industrial exposures, and knowledge of the legislation of one's state as to dermatitis.

The dermatologist should be cognizant of these subjects. His training should enable him to diagnose eruptions arising from natural causes and those due to occupation. Experience in similar cases and study of the hazards, the mode of onset, and the resulting physical signs will result in a decisive opinion in a large majority of cases, but there will remain a small group in which the cause is undetermined and disputed and must be settled by an Industrial Accident Board. Medical testimony is given in the same way, whether in court or before an administrative tribunal



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such as an Industrial Accident Board, except that the latter may receive it a little less formally. The attending physician is sworn and then asked to state when he first saw the patient, what history he obtained, what complaints were made, what his examination revealed, his diagnosis, and whether the history disclosed an adequate cause of the condition diagnosed. Then he may be questioned regarding nature and dates of treatment rendered, convalescence and end result. At this point the witness is usually subjected to cross-examination by opposing counsel with the purpose of showing that the doctor does not have full notes to aid his memory, that the condition found is not consistent with the accident described, or that the physician is interested, prejudiced, or ignorant of the particular subject matter. Since litigation may not occur until long after the injury happened, since the exact circumstances of the occurrence as well as the immediate complaints are usually of prime legal importance, the necessity of concise notes cannot be emphasized too strongly. Lack of them has embarrassed many an honest witness and hampered many a meritorious case.

The expert testifies in practically the same manner, except that he is asked to assume the existence of certain facts, and to state his medical opinion upon that basis. On cross-examination he is usually asked to consider additional hypotheses and say whether they would change his opinion. The court may then have a different opinion to follow according to the particular set of facts found to be true. The witness is permitted to state only his own opinion, and not what he has read in the textbook or heard from others, although, of course, his own opinion is based upon his reading and discussions with others as well as upon his own experience.

Recently I reviewed over 100 copies of reports of hearings of the Massachusetts Industrial Accident Board on injuries allegedly due to industrial dermatoses. The first one was dated September, 1920. It was an interesting and profitable study of testimony given by myself and my contemporaries. It was evident that youth, inexperience, and lack of knowledge tended to make even the honest physician more positive and more prejudiced. The younger physician, in his enthusiasm, assumes the legal responsibility for the final decision. He forgets that his role consists merely of relating facts, and, if he has qualified as expert, to express his opinion on them. He forgets that the hearing has resulted frequently from his opinion previously rendered. If at that time it is proved that his study of the case was inadequate, and new facts are presented to render his opinion untenable, he should be the first to admit it. A thorough study of the history would have prevented such an admission. The young physician is apt to be convinced that he is right, forgetting the golden rule that to err is only human. Dermatology is noted for its complex terminology, but even dermatologists would be astonished at some of the dermatological diagnoses made by general practitioners at these hearings.

No opposing counsel can break down honest, careful, and complete recital of facts which support the diagnosis of dermatitis venenata industrialis; i.e. a dermatitis due to an external irritant, when there was in the course of employment adequate exposure to cause a personal injury. Expert training and experience should be able to sustain the diagnoses of non-occupational diseases. It was noteworthy that, on cross-examination, straight-forward, brief replies stood, but ambiguous, lengthy recitals afforded opposing counsel great opportunities for confusing the witness. As a rule dermatologists agree as to diagnosis, but differ in the various complications that may arise. Recurrences, new injuries, disability, and the question of returning to the original exposure make controversies. The evaluation of patch tests is a subject for interpretation. The subject of eczema, hypersensitivity, fungous infection, and aggravation are the main subjects of contention.

New Injury or Recurrence

AS STATED previously, the Board has certain fixed ideas regarding medical aspects. Conspicuous among these are the words "new injuries" and "recurrences." If a man suffers a disability from an injury caused by an industrial dermatitis, he is entitled to compensation. If this derma-

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titis is relieved so that there are no clinical evidences of it remaining, and the man returns to work, any subsequent outbreak is a new injury and the liability should be assumed by the insurer of the last concern by whom he was employed. If, however, the worker returned to work while the original dermatitis was still present and as a result of this work he has an acute exacerbation of his previous dermatitis, then the company who insured the original employer is liable for compensation for disability resulting from this later renewed activity of the occupational dermatitis. It is on these apparent primary facts that many hearings are held at the Industrial Accident Board, and I have seen as many as three or more insurers involved in one case. Frequently these situations result from the misuse of a single word by the dermatologist testifying before the Industrial Accident Board, as illustrated by the following case:

Hg. No. 79485, *Anna Sylvia vs John McCarthy & Son; Travelers Insurance Company, Lumbermen's Mutual Casualty Company.* Anna Sylvia, a housewife and mother of two children, worked off and on for five years as a seasoner of skins. In her work she used a brush, but frequently the various stains or dyes splashed on her arms. She was also exposed to formaldehyde. After working for three years, a rash broke out on her hands, forcing her to stop work. Relieved after two months' treatment by Dr. X, she returned to work, wearing rubber gloves. She had no dermatitis until February, 1941, when it again appeared, and spread all over her body. She was disabled for 14 weeks and received compensation up to May, 1941, by the Travelers Insurance Company. On returning to the factory she was refused employment. Therefore, from May, 1941, to September, 1941, she didn't work except at home. Owing to the action of the union she resumed her former work on the latter date. Despite the fact that she wore rubber gloves, her hands and face broke broke out in a rash after two days on the job, and she was forced to stop work. She received treatment from her local physician. I saw this woman on April 30, 1942, at the request of the Lumbermen's Mutual Casualty Company. At that time she gave as her chief complaint a rash on her skin for three years. In her history she stated that she had never been free from an eruption on her skin since the onset, and she showed a lichenified eruption on her forearms. In view of her history I agreed that it was a continuation of her original dermatitis acquired three years previously.

At the company's request I attended the hearing. The attending dermatologist appearing for the Travelers Insurance Company stated he first treated the employee from December, 1938, to March 30, 1939, and again in February, March, and April, 1941, and January 13, 1942. On April 14, 1941, "she had a residual of a previous dermatitis." Shortly thereafter she cleared up entirely and remained clear all summer, until she returned to work September 31, 1941. Then her rash returned after two days' exposure. In view of this history, he stated that the present condition was due to an exposure on September 31 and October 1, the last two days of work. His report then read: "In view of the numerous flare-ups I feel that she should not resume this type of work at any time, even after this attack has been cleared up." On direct examination, to his counsel he explained the words "residual of the previous dermatitis" on April 14, 1941, as meaning evidences of healing which were of such a nature that she should be completely clear within a very short time after examination. In cross-examination the witness gave a long and lengthy dissertation on the words recurrences and flare-ups. According to him a flare-up consisted of "a condition which has not completely healed up, undergoes an exacerbation of the symptoms and signs, i.e., an existing condition in which the symptoms became aggravated over what they were." (This, of course, was a contradiction of his original opinion.) His later interpretation of flare-up became more confused, but he insisted that he did not mean that she had a recurrence; he then went on to state he considered a flare-up an aggravation of a condition already established.

In brief this dermatologist had appeared for the Travelers Insurance Company for the sole purpose of establish-

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ing the fact that as a result of two days' exposure to the work of a seasoner she had suffered a new injury for which the Lumbermen's Mutual Casualty Company, the insurer at the time of that exposure, should be responsible. His opinion was logical and based on an intervening period when she was free from eruption. However, his unforunate use of the word flare-up befogged his testimony and rendered it useless to the Commisisoner. After hearing his testimony, my counsel did not need my testimony, which, in view of the contradictions of the history given to me, would have necessitated my change of opinion that she suffered a new injury. The report of the three industrial referees was introduced in evidence. Apparently no one of these men knew the previous decision of the Supreme Court. According to the history received by them, when she returned to work in September, 1941, "she was all right" and suffered an attack after two days' exposure, and they believed that she had a recurrence.

The decision of the presiding member was that on September 30 and October 1, 1941, the employee did not sustain a new injury, but suffered a recurrence of the dermatitis that she originally contacted on December 19, 1938, and ordered the Travelers Insurance Company to pay her compensation from October 1, 1941. They appealed but the full board on review affirmed the decision of the single member. The Travelers Insurance Company appealed from the findings of the full board to the Superior Court and in turn to the Supreme Court. However, such appeals must come to these courts on questions of law and not on questions of fact, and the full board finding was not disturbed.

Insurance companies go to considerable expense in an effort to establish definite rules of law for general guidance in the handling of Workmen's Compensation cases. As in the above case, they ask the court, "What constitutes a recurrence?" This case apparently contradicts three other decisions of the Supreme Judicial Court of Massachusetts (*Corey's and Maloof's case*, 276 Mass. 610, and *Panagotopulos*, 276 Mass. 600) in matters where the employees, after having received compensation from the insurers of the original employers, went to work for other employers and were subjected to irritants and became disabled again. Whether the latter were insured does not clearly appear, but at any rate the Industrial Accident Board held the original insurers liable for compensation. The Supreme Judicial Court reversed these decisions and said that in each case there was no evidence that the subsequent attack of dermatitis was due to the original exposure and not to the later contact with irritants, as an independent intervening cause which broke the chain of causation between what happened originally and the disability in question. I believe the opinion of the three industrial referees played a great part in this court decision. Their conflict of opinion places this case in the same category as the *Wentworth case*, 284 Mass. 479, where the Board held the original insurer liable. This time the court sustained the Board and decided that the evidence warranted a finding that the original dermatitis never cleared up and that, since there was no evidence that further exposures affected the original condition, the rule laid down in the previous cases was not applicable. As a result of these decisions the Industrial Accident Board has tried to adhere to the rule that once an employee is relieved, that is, shows no clinical evidence of his dermatitis and returns to work, any subsequent outbreak is a new injury for which the liability rests on the insurer of the employer at the time of the second attack, whether or not he is the original insurer.

Inasmuch as Workmen's Compensation insurance premiums are based upon the amount of money paid yearly as benefits under the Act, there is an incentive for concerns to throw back the liability onto a previous insurer. As opinions of the physicians and resulting decisions must depend almost entirely on the statements of the claimant and others, it is here that we often listen to testimony of apparently prejudiced witnesses. When we ask a private patient, not seeking compensation or redress for his dermatitis or eczema, the duration of his eruption he may unhesitatingly say "years." However, careful analysis reveals that it may be periodic or may have cleared at various times only to reappear days, weeks, or months later. So the employee seeking compensation may truthfully

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state his eruption has been present since the original onset. He may believe he has been poisoned, and it is in his system. Hence, the value of careful history, and also the supreme necessity of treating a patient until every vestige of the dermatitis has disappeared for a reasonable period. It is also important because if a patient's skin is thoroughly healed, he is more apt to remain well when he returns to work. If a man's former work involved contact with sensitizers, then I always advise him not to return to that work. If he has been injured by a recognized primary irritant he will avoid that substance or handle it with proper respect, and so can frequently return to his former occupation with impunity. A primary irritant is a substance which in a given concentration, acting over a given period, and under certain conditions, will affect the majority of individuals. A sensitizer is a substance which is normally not injurious to the average individual, that is, it is an abnormal reaction of the skin to a normally innocuous exposure.

A type of compensation case difficult to handle is where a conscientious worker who suffers an attack of dermatitis, wishes to work or is prevailed upon to work. It may be due to an attempt to desensitize him, for if an employee continues to work despite his dermatitis, he may become immune. However, if there is no improvement after a reasonable length of time, or if the eruption increases, he should be made to stop work. A man should not be kept at work merely to maintain a statistical record of no loss of time for the safety department, or to keep down the insurance rate, or to maintain the plant physician's excellent health record. The chief danger in keeping certain individuals on the job is that they may become so sensitized that the slightest exposure causes exacerbation of their previous dermatitides. Each attack is usually more severe and more distributed. The usual procedure is that a man is put on a job where there are no irritants, and his dermatitis quiets down. Before he is entirely relieved, he is put in contact with a new irritant, with resulting disaster. Each time his earning capacity becomes lessened, until finally he becomes so sensitized that the last exposure results in a generalized dermatitis which takes months to heal. Then he is cast out of employment. Perhaps the risk has been taken over by another company in the interim, or successively taken over by one or more companies. The man then becomes a subject of controversy as to who must pay, must secure legal representatives, and fight his claim just as if he were not entitled to compensation. In the meantime his family suffers; he must borrow money to maintain their existence, pay bills for medicine and doctors' fees. Besides his physical sufferings he has the worry of the impending hearing. The original company is no longer the insurer so that it is to the benefit of those representing the present company to throw the case back onto the original insurer in hopes the next rate will not be increased and the record will be kept straight for the company.

I believe that there would be fewer disputed cases before the Industrial Accident Board if the courts accepted the fact that the compensation act provides for disability only. What holds for a strained back should also hold for an industrial dermatitis, as was demonstrated in *Borstel's case*, 307 Mass. 24, where the Supreme Court ruled that despite the fact that the man had previous injury to his back, the final act which produced disability was his work at his last place of occupation, and therefore found that the last insurer should assume liability. However, the chief objection to this is that it would be absolutely necessary entirely to relieve a patient from his occupational dermatitis before he resumed any type of work, and would result in employers refusing to accept or hire an individual suffering from any type of rash. This would, of course, prevent numerous workers from resuming work, for there is no question that a slight eruption does not totally disable an individual from doing work that does not involve contact with irritants. Therefore the Board continues to rule upon the particular facts in each case individually, and the Supreme Judicial Court treats each case on its own merits. There is no uniformity—perhaps not even any consistency —in the decided cases.

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in Massachusetts does not exist in some of the other states. In Maine, New Hampshire, and Vermont, for instance, the Workmen's Compensation Act applies only to injury by accident. Thus dermatoses generally are not compensable at all. In Rhode Island the Act provides compensation for "personal injury by accident" and thus excludes industrial dermatitis, but in 1936 there was added a schedule of occupational diseases which are compensable if there is actual disability, and if the disease arises out of the employment in question. So anthrax arising out of the leather or wool industry, chrome ulceration or poisoning, dermatitis (venenata), and other specified conditions are covered. The Connecticut Workmen's Compensation system permits an award compelling insurers to share responsibility for compensation in cases where there is exposure to irritants during successive or concurrent periods of employment. Whether the various states should adopt uniform Workmen's Compensation Acts continues to be a topic of debate. As modern transportation systems and innovations cut down the time between world-points, and the expense of making the transition, there is a greater migration of workers and so a greater need of uniformity.

Sensitivity

IN MASSACHUSETTS the compensation law does not regard susceptibility to disease as a compensable injury. In *McCann's case*, 286 Mass. 541, the claimant had been disabled by his dermatitis from September, 1932, until April 12, 1933, when he returned to his occupation until June 14, 1933. At that time, on account of his condition he was told "he could not work longer." He then went to the Board and obtained an award of total disability compensation. The Court decided that testimony in the record to the effect that, although the original eruption had cleared up, employee's "skin had never returned to normal" was sufficient to justify a finding of "disability as to the particular employment but not as to employment in general. It was the duty of the employee to try to get other work." In his case the Court said further that the employee's return to his usual occupation after his original attack was not as "a matter of law" "such a voluntary act . . . as to break . . . causation" between the original condition and the later incapacity. Apparently the Board could have found as a fact that he broke the chain of causation and so barred himself from further recovery for the original injury. This language at first glance might seem to complicate matters, but it really is a reiteration of the elementary rule that the decision of dermatitis cases is governed not so much by legal principles as by determination of the issue whether the employee's present condition is due in fact to the original exposure or to something else.

Other court decisions have ruled that susceptibility to disease produces a certain amount of partial incapacity, for which the worker is entitled to partial compensation. (*Santini vs Levin*, Conn., 147 Atl. 680.) In other states compensability for disability arising from idiosyncrasy (allergy) is greatly disputed, but today most courts are finding that despite a person's hypersensitivity or idiosyncrasy, they would not suffer their dermatitis except for certain exposures at their work. This exposure might be even the routine use of soap in the washing of the hands of the workman. (*Webb vs New Mexico Pub. Co.*, 141 P. (2d) 333 (N. Mexico, 1943).) The courts are willing to pay a man. However, if as a result of this hypersensitivity the man develops a dermatitis and becomes disabled he is entitled to compensation until he is cured, but the fact that he is allergic to a substance does not mean that he is entitled to further compensation, as was stated by the court, "It is possible that the allergy still exists, but a fair interpretation of the act leads us to the conclusion that a mere allergic condition from which some affliction might develop was not contemplated in the act." (*Sinclair Refining Co. vs West*, 44 N. E. (2d) 175 (Ind., 1942).)

Aggravation

AGGRAVATION of a pre-existing cutaneous disease is also recognized by the Board and causes conflicting decisions. These cases require intensive study, and of special

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value is the history of the case. It is most important for an employer to know whether or not the applicant for work presents a dermatological problem. If he had a cutaneous disease at this time, exact description of this eruption should be made on his record. The dermatologist should inquire for this record and also inquire from the patient the exact extent of his eruption. It must be then shown that the working conditions entailed a special risk for this type of employee, and as a result of these working conditions his disease became severe enough to render him unfit for work. In dermatological entities this progress might be either rapid or very gradual, depending on the exposure. If the patient is accepted as being disabled as a result of aggravation of his non-industrial dermatitis, then the physician must try to discriminate between the natural development of the non-occupational eruption and the disturbances caused by the injury received at work, and should be able to determine when the results of the aggravation have ceased and only the pre-existing disease remains. If the patient had suffered from a clearly defined systemic cutaneous disease, such as psoriasis or syphilis, then this decision is fairly easy. For example, if a man suffers an injury to his leg and suffers a localized patch of psoriasis, he should receive treatment only until this patch is relieved. The same is true regarding a gumma resulting from injury. However, such an injury as in the case of the loss of the sight of both eyes in a patient suffering from syphilis might result in total permanent disability. This was shown in the case of *Nicotra vs Bigelow, Sanford Carpet Co.* (Conn., 189 A.603) where the court stated, "In the present case the ultimate conclusion of the Commissioner was that the injury which the claimant received because of his condition affected the optic nerve in such a manner as to result in loss of sight of both eyes." As the record supported this conclusion, the court said the disability was compensable. The cause was remanded to the superior court, with directions to enter judgment for the claimant.

Dermatitis and Eczema

THE USE of the word eczema causes considerable confusion. Every eczema is a dermatitis, but not every dermatitis is an eczema. The word eczema is a frequent cause of confusion in medical reports and at hearings before the Industrial Accident Board; therefore, the use of a word such as ergodermatitis might be of value. Ergodermatitis may be also classified according to the strength of these agents, the length of exposure, and method of application as non-sensitization dermatitis (often called dermatitis artificialis or traumatica) and sensitization dermatitis. When the former ends and the latter begins cannot always be determined. Non-sensitization is a cutaneous disturbance caused by mechanical or physical agents or primary irritants such as powerful chemicals applied accidentally or deliberately to the skin. It is characterized by all degrees of inflammation and may be marked by destruction of all the layers of the skin and subjacent tissues. The causative factor is usually recognized and known to the patient.

Sensitization dermatitis, also called occupational eczema, contact dermatitis or contact eczema, allergic dermatitis or allergic eczema, is an inflammation resulting from repeated exposures to substances innocuous to a normal skin. The condition presents the usual lesions of dermatitis and is primarily an epithelial reaction with secondary inflammatory changes in the corium. The disease may be specific or non-specific and is usually acquired in extrauterine life. In occupational eczema this hypersensitivity is so acquired. A review of 500 cases showed only one with a positive family history; 33, or 6.6%, disclosed a previous history of cutaneous eruption, and of these 13, or 2.69%, had been classified as industrial. The onset of a sensitization dermatitis is rarely manifested by a sudden explosion except when a person has contacted a substance for years, avoided contact with it, and has a renewed exposure, at which time his sensitization may appear suddenly and explosively.

Patch Tests

PATCH TESTS are two-edged weapons which frequently confront the dermatologist in his testimony. The patch test has been of great value in the search for the causative agent; however, it has very definite limitations. It is impossible to reproduce the worker's environment. He may show repeated negative tests with a prompt recurrence on his return to work, showing the presence of an

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unknown factor such as escaping fumes making a chemical combination with a nearby metal, or heat, steam, moisture, friction, or the element of fatigue. It is impossible to duplicate the combinations which given materials can make at various times, and this is why bakers' dermatitis has been such a mystery. In doing patch tests with solutions, it is important to know the chemistry of the solutions before attempting to dilute them with water, for, if some solids are soluble only in strong acids and others only in strong alkalies, the dilution of these may produce a precipitation which will give a false positive reaction; this is especially true with alcoholic solutions. The patch test is beginning to cause injustice to both employee and employer. The latter is now apt to protest a claim unless positive tests are found, and the test is being used by unskilled men who are placing solutions under sealed dressings for 24 hours which would produce a dermatitis on any skin. Again, a sensitized skin may respond to every substance tested so that it is well to apply also substances not under suspicion. Patch tests have no diagnostic value. They have their fallacies and limitations, but with a carefully taken history showing definite exposure to the test material, and with a characteristic test eruption, a positive finding followed by the prevention of further exposures should result in a cure.

Fungi

ONE frequently hears or reads that an industrial dermatitis persists because of secondary infection with fungi. Direct microscopic or cultural proof is rarely presented. The hands and feet of 406 patients with contact dermatitis persistent for three months or more were examined by trained mycologists working under my supervision. Direct microscopic examination of scrapings showed fungous infection of the hands of five, and cultures showed fungous growths from the hands of two, both methods demonstrating Monilia albicans. Trichophyton was demonstrated in material from the feet of three patients, and M. albicans in material from the feet of four. Dermatophytes do not find the site of active inflammatory industrial dermatitis a suitable terrain for growth; the secondary invaders are pyogenic bacteria. A person suffering fom a contact dermatitis is no more subject to mycotic infection than one with normal skin. Fungi pathogenic to man are not found on all normal skins; careful mycologic studies on 100 persons revealed a pathogen on the skin of only 2%, namely Trichophyton, on the skin of two; no one was found infected with M. albicans. Certain types of molds and yeastlike bodies have been found persistently in certain occupational rashes due to the presence of these organisms in the contacts, but that does not prove that these saprophytes are the pathogens. For example, workers picking or packing fruits or vegetables suffer eruptions due to the irritating action on the skin of the fruit, the juice, and moisture, with resulting maceration of the interdigital and paronychial tissue. This dead tissue maintains these saprophytes, but they are not necessarily the causative factors of the original eruption. Mechanical irritation from molds may occur also among those handling dried fruits and among gatherers of crops such as sugarcane, stalk, straw, hay, and raw cotton. A growth of Aspergillus may be found on the skin of various parts of the body, even in the nose and the ears. True pathogens, such as M. albicans, Trichophyton, and Epidermophyton, are seldom found as secondary invaders of the sites of occupational dermatitis.

In Massachusetts a fungous infection of the skin is considered a disease and not compensable. The act provides only for a personal injury arising out of or in the course of employment. Fungous infections occur irrespective of occupation. However, if a fungous infection can be shown to be a natural result of trauma originating at work or a secondary infection of the site of a previous industrial dermatitis, or if it can be demonstrated that the work aggravated a pre-existing dermatomycosis that was a result of trauma or of the working conditions, the Board recognizes these facts in its decision and finds that the dermatomycosis is a result of an injury resulting from the worker's employment. The decisions are reasonable and practical, and if there is no evidence that the work would aggravate the disease the patient has little support.

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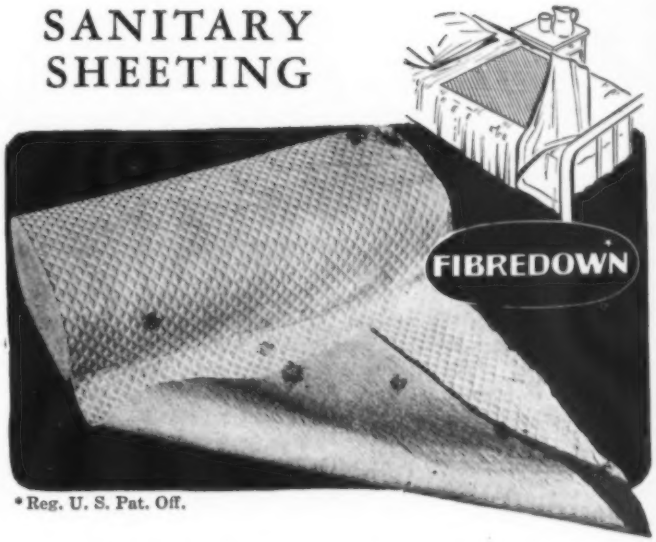

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In a former review of 2,000 cases, 179 were deemed dermatophytosis and therefore not compensable. These were disputed less than one would expect, for the patient is usually aware that the disease started on an unexposed area such as the feet, often knows or suspects the diagnosis, has had previous attacks, knows of no irritants in his work and is frequently seeking advice rather than compensation. Among 1,433 patients with industrial claims encountered in private practice from 1938 to 1942 there were only 142 (about 10%) who showed any clinical evidence of fungous infection; the feet of all the patients, men and women, were examined, the men completely stripped, and the women when indicated. Interdigital maceration, onychomycosis, orange-colored hyperkeratosis, vesicular lesions and scaling of folds of the skin were noted; scrapings and cultures were made in questionable cases. Fifty-one showed evidence on the feet alone; 31 more had lesions of the palms and of the lateral aspects of the fingers also; nine showed scaly lesions on the body and on flexural folds, and four on the hands alone; 51 more had compensable aggravation or concomitant industrial dermatitis. Ninety-one persons were deemed to have lesions not related to occupation, most of them being clerks. However, even they may have had an attending industrial complication; for example, in one girl sensitized by her white gold ring, dermatitis of the palm developed from contact with the nickel plated handle of her comptometer; in two other employees dermatitis developed from rubber fingercots, and, in one employee, from the cream used to remove the ditto ink. The other cases were associated with occupations entailing wet work, friction, contact with solvents, detergents and cutting oils, the patients being bartenders, soda fountain clerks, printers, dyers, machinists, and fruit and vegetable handlers. Two patients had aggravation of their dermatophytosis because their feet were constantly wet from insanitary plant conditions, and eight from superimposed trauma. Dermatophytosis is a disease of males; only 23 females were affected.

As to deep-seated infections, biopsy specimens are of more value than scrapings and smears or cultures. Biologic extracts are of doubtful value. Previously it was thought that a negative reaction to trichophyton was valuable in that it ruled out fungous infection, but it has been shown that this test may be negative in the presence of active mycotic findings. A careful history, knowledge of occupational exposures, patch tests, and trained clinical observations are the main essentials for diagnosis.

Conclusion

BRIEFLY, in Massachusetts there is a rational law unhampered by rules, definitions, and regulations. It is administered by reasonable people in a practical manner for practical people, supported by the courts except in cases where findings are not based on facts supported by evidence and not in accord with the law. The Board members from experience have learned to evaluate medical testimony and have certain fixed ideas on medicolegal problems. It was not the intention of legislators to compensate for disease, but for disability resulting from personal injury from an occupational disease of the skin.

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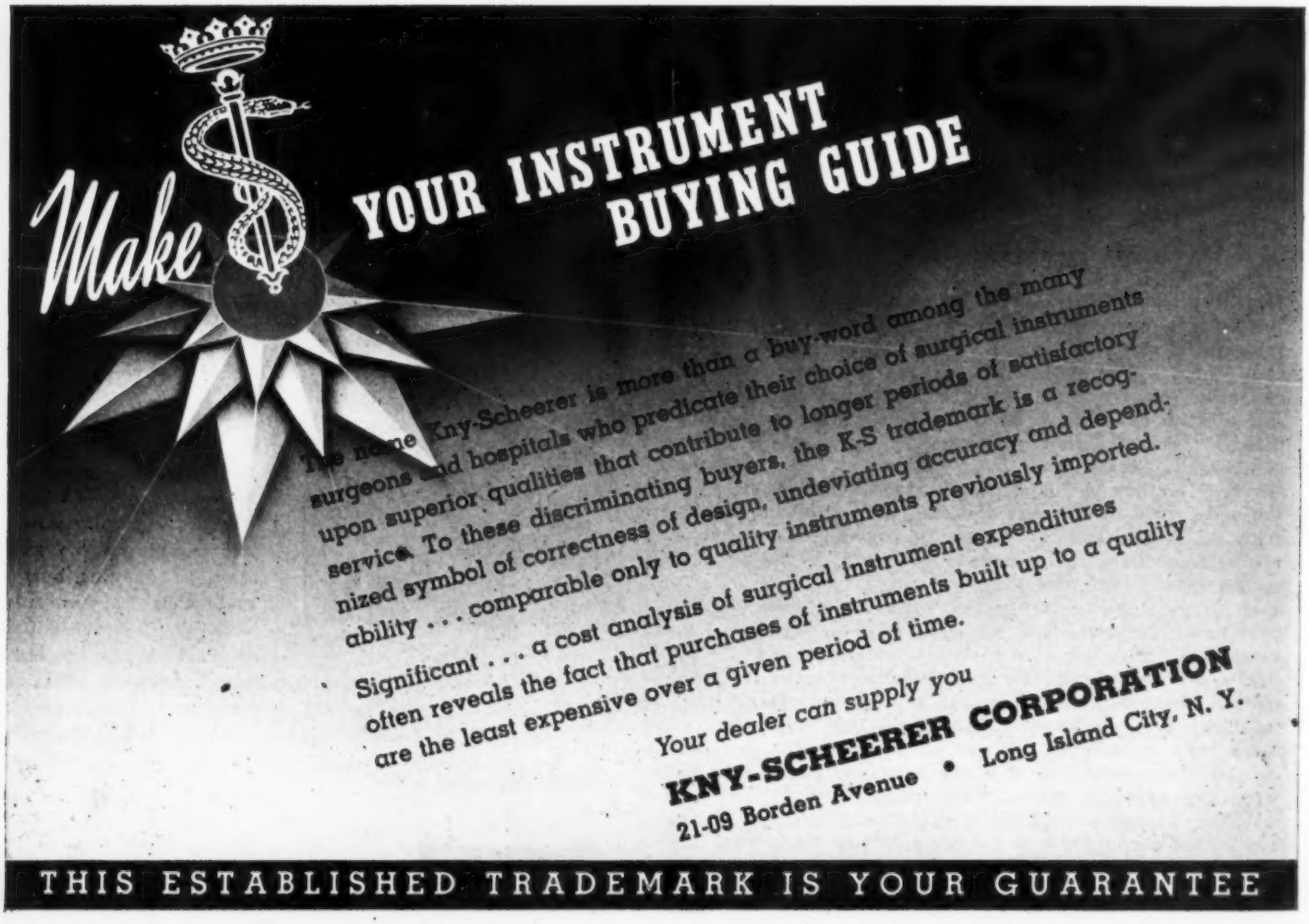
J. Indust. Hyg. & Tox. abs. from *Medical Bulletin of Standard Oil Co.*, 6: 98, October, 1944; in *Industrial Hygiene Digest*, July, 1945.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—Abstracts of Papers Given at Meetings of the Industrial Hygiene Section, Second Annual Public Health Conference, Denver, May 24-25, 1945—

Role of the Plant Physician

L. V. SAMS, M.D.,
Medical Director,
Remington Arms Co., Inc.,
Denver

MEDICAL service in industry has been elevated in a quarter of a century from the position of a necessary evil to that of an essential part of successful industrial operation, from the viewpoint of management and employee alike.

The maintenance of employee health and the prevention of injuries are the most important functions of the plant physician, for industrial medicine is preventive medicine in its broadest sense. It is highly important, therefore, that the physician have not only the proper qualifications for this work but also the proper working tools. His success depends mainly upon a staff of nurses having keen perception, understanding and common sense, as well as nursing ability. Important also to the success of the plant physician is a scientifically planned health and safety program which is respected by management and the individual worker.

The examination of the prospective employee requires great skill and knowledge, so that he may be placed in work for which he is physically and mentally fitted. It is necessary that the plant physician know well each job in the plant. Thoroughness in examining the application for employment must be followed by an explanation to him of his remediable defects and advice as to the remedy. It is an obligation of the plant physician regularly to check the employed person's condition relevant to the correction of these defects. The decisions he makes should be impartial, as the medical department should serve as neutral territory between management and employee, the recipient of the confidence of many individuals who rely upon the advice of the plant physician. The plant physician must be a practical psychologist, for he must understand the personal problems and the emotional factors affecting each employee.

Another important function of the plant physician is seen in his determining the advisability of an employee's transferring to another job because of a physical complaint. Careful analysis of all phases of this problem is needed in order to effect a happy solution. Many workers suffer handicapping injuries in the performance of their duties, and the plant physician should make every effort to rehabilitate these employees, helping them to believe that they are useful and valuable. Industry can do much to avert tragedy in these ranks by continuing disabled workers on their payrolls until they become able to rehabilitate themselves.

A thorough acquaintance with workmen's compensation laws and insurance is needed by the successful plant physician.

Education of the local medical profession in its relationship to industrial medicine is necessary for thorough understanding and cooperation. If the plant physician finds that preventive measures in protracted and severe illnesses are ineffective in some cases, he must refer those patients to the local physician whose understanding of all circumstances surrounding the employees will have a direct bearing on their ability to resume work.

The mental health of the employee has been too much disregarded, causing a serious personnel turnover. To prevent this, psychiatry should play a major role in industry, more so than it has in the past. The need for this should be apparent when considering the return of War Veterans to industry. The employment departments will need very careful advice and the plant physician must be in a position to give them and the substandard employees the full benefit of psychiatric counsel.

To summarize: Industrial medicine is essential to industry. Its functions are: (1) to select employees physically and mentally fitted for the jobs; (2) to practice preventive medicine in maintaining health; (3) to assist in the carrying out of health and safety programs; (4) to counsel with employees as to disturbances; and (5) to act as the liaison between management and the worker to maintain harmonious industrial relations and avoid lost time.

Role of the Industrial Nurse

AGNES SULLIVAN, R.N.,
Continental-Denver Modification Center,
Denver

INDUSTRIAL nursing means the nursing of the sick or injured worker in addition to advising him as to healthful living, and it involves a thorough working knowledge of first aid, which is defined as the first temporary immediate care given to the injured or sick worker until the physician can treat him. First aid implies, in addition to temporary treatment, teaching prevention of illness and accidents. The industrial nurse should enlist the help of state and local health administrators more frequently in order to establish a closer relationship between workers in other public health fields, which would further her program to combat illness, loss of wages and production.

The qualifications of the industrial nurse are unique, for she must not only be well prepared in her field, but also be eager to continue learning. An employer should look for the following personal qualifications in selecting nurses: Interest in people, good health, emotional stability and good judgment, the ability to organize —and the supervisors must have executive abilities. To qualify professionally, she should meet these requirements: Education on a college level in public health; a graduate of an accredited nursing school, registered locally; ability to do clerical work and typing; experience especially in the emergency room, surgery and outpatient department; also preparation

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in public health and industrial hygiene. In addition, the industrial nurse should have knowledge of social case-work, community organization and resources, so that she may help the worker to take advantage of the resources if he should have a problem which could not be handled directly by the nurse.

The responsibility and services of the industrial nurse within the plant are manifold. She must maintain an aid program broad in scope, for it must include a plan of maintaining sanitation standards for employees and a regular routine of inspection tours in the plant to learn of hazards and the way to combat them. The conditions in the entire plant should be familiar to her if she is to assist materially in accident prevention. The employees often ask the industrial nurse for advice concerning problems of a personal nature, and this is truly an important phase of her work, for it is through this relationship that she is able to lay the foundations for a spirit of cooperation between the employee and the health and safety programs. Assisting in the health and safety department directly is a natural part of her work, for she keeps records which show the source of injuries and illness. As an example, her records would show that there existed a high frequency for one type of accident in one department, and by calling this to the attention of the plant engineer and the safety director this hazard would be reduced or eliminated altogether.

The industrial nurse keeps daily, monthly and annual records. They are classified according to cause, i.e., accident, illness, occupational or non-occupational. The effectiveness of the nurse's activities is shown by her records, and her work may be evaluated by them. They are used in reminding the worker of treatments he needs and in protecting him in case of complications during an illness. They protect the employer, also, from false claims. These records should be confidential, and patients should not be discussed by the nurses in the presence of others. Violation of this privacy will preclude the confidence of the employees which is imperative in establishing cooperation with the health and safety program. Friendliness and dignity should keynote the attitude of the industrial nurse toward the employee, and she should be mainly concerned in caring for the employee who needs help of any kind.

Home services, if they are not obtainable through social agencies or the local Public Health Organization, may be offered by the industrial nurse. Time spent this way, however, should be limited by teaching a member of the household to give proper nursing care.

The industrial nurse should give cooperation in all programs for the prevention and cure of disease, in so far as the policy of the company allows for its employees.

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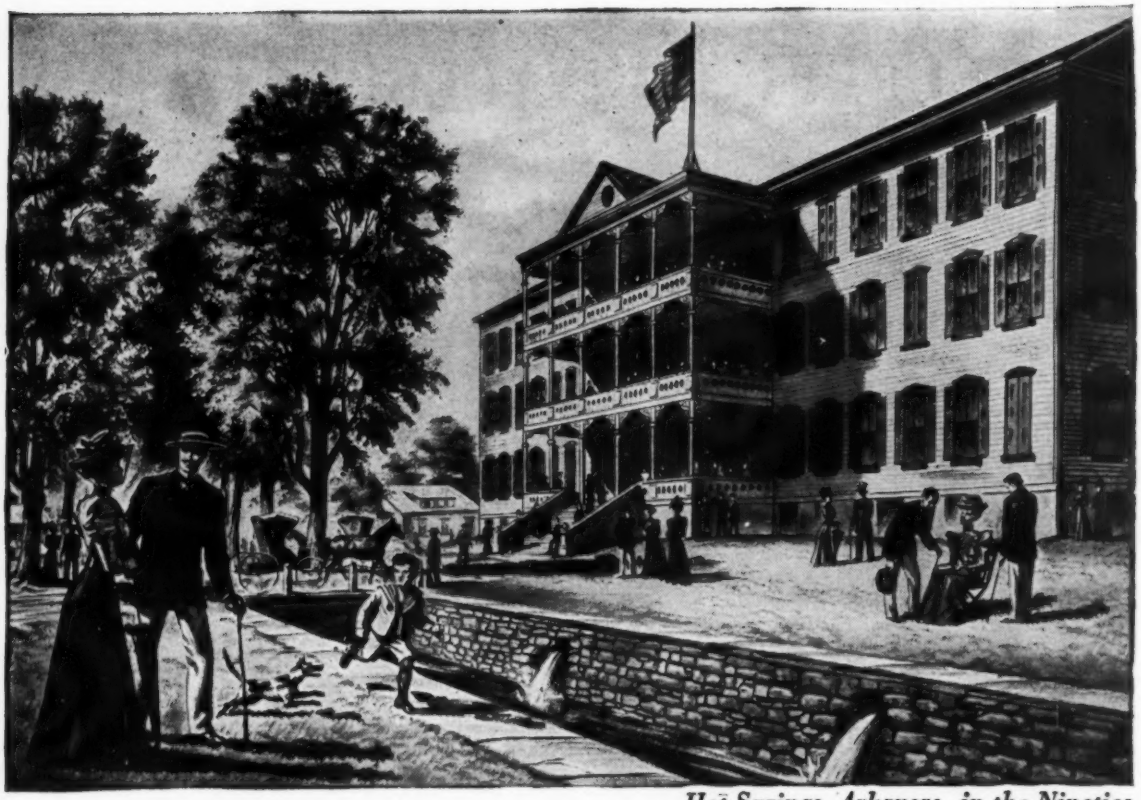

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Role of the Plant Industrial Hygiene and Safety Engineer

W. E. JONES,
Safety Engineer,
Climax Molybdenum Company,
Climax, Colorado

THE safety and industrial hygiene program of the Climax Molybdenum Company is based on the concept that the mental, social and physical welfare of the employee is of direct concern to the company and that reasonable expenditure of time and money is justified in order to create satisfactory living and working conditions. The safety and industrial hygiene engineering departments are coordinated and directed as one unit because of conditions peculiar to Climax' operation and because the company believes the problems of both departments are inter-dependent. The need for this combined department is illustrated by the following four outstanding problems encountered by the company:

Problem 1: The employee with unsolved personal problems may present an uncooperative mental attitude toward safety and hygiene in industry, causing carelessness and accidents.

Problem 2: Accidents are abnormally high among employees who are physically or mentally unfit for their job; this problem will increase with the returning of war veterans.

Problem 3: Living and working conditions affect the health and consequently the safety of the worker. Consequently the Climax Company has built suitable living quarters, a water purification plant, and improved ventilation, and tries to control temperatures in so far as possible of the working place.

Problem 4: The problem of proper equipment and suitable work methods is very important. The lack of solving this problem is a great cause of ill health and accidents, but this may be successfully met with adequate planning and experimentation.

The personnel of the safety and industrial hygiene department is organized with a director, assistant director, secretary, ventilation engineer, dust engineer, dust sampler, mine inspectors, surface inspector, medical director, clinic technician and clinic stenographer. The director, his assistant and the inspectors must have been at least shift bosses, and the first two must have a technical education background. Shift bosses are employed as inspectors from three to six months in the departments where they were operating bosses, to take advantage of their operating background and judgment of safety which is respected by the employees. Every working shift is provided with an inspector. The dust engineer makes studies of the dusty conditions in mine and crusher, and plans control measures. The ventilation engineer is responsible for the operation of the mine and crusher ventilation for the elimination of fumes, gases and dusts. He designs control equipment, inspects its operation and reports his findings to the department involved. The results achieved by the program carried out by the department are well worth while: During the past five-year period the company compensation insurance rates have been reduced about 60%.

The department of safety and industrial hygiene handles all job transfers, when such action is indicated by clinical examinations. Pre-employment clinical examinations are followed up by yearly re-examinations. The employee who has been disabled is permitted to return to work only upon the consent of the medical director. It is by these policies that a close check is kept on the physical fitness of the individual worker.

In order to convince employees that the department of safety and industrial hygiene is primarily interested in their health and safety, and that with this protection they become more valuable to the company and to themselves, regular meetings with all department personnel are held in which industrial health and safety are discussed, during which employees are asked to contribute suggestions. Goodwill toward the general program is built by encouraging employees to

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feel free in consulting the department about personal problems.

Constant experimentation is being done to improve the controls of dust concentration. New methods of ventilation, changes in working methods, and the use of water in several ways are some of the most effective improvements. The department of safety and industrial hygiene studies all occupations carefully in an effort to eliminate hazards wherever possible. Complete records of any problem in industrial hygiene or safety, and copious notes on experimental measures used, enable the department to detect faulty equipment or improper work methods as being the cause of undesirable exposures.

The Industrial Hygiene Division of the University of Colorado is retained as a consultant to this industrial hygiene program, and has been of great help in many ways. The program as a whole has proved profitable for the company, as it has decreased labor turnover, compensation insurance rates, and production costs by improving employee relations, health conditions and efficiency, and lowering accident rates. The Climax Molybdenum Company believes these factors to be vitally important to the successful operation of the plant and mine at Climax, and plans to expand these activities whenever necessary in order to maintain the operation of this program at a high level.

Role of the Colorado Industrial Commission

ALBERT E. ZARLENGO,
Secretary to Industrial Commission, State Capitol Annex Building, Denver

THE war has made us realize the importance of maintaining good health and has shown us what safety can do to boost our industrial production. We have become safety conscious, and the various groups interested in this problem have been welded together with a common goal—better health and fewer accidents. Every state is expanding its safety and accident prevention program.

The Colorado Industrial Commission administers many laws which have a direct bearing on this problem. The Workmen's Compensation Act is for the purpose of providing an injured person with a regular weekly amount during his period of disability. It vitally affects the health problem, since it keeps the worker and his family during the time he is unable to work because of an injury. Also, it provides the family with compensation if the worker is killed. This law applies only if the worker is injured or killed in the course of the employee's employment, and every employer of four or more is subject to the Colorado law with the exception of farm and ranch labor and domestic servants. An important adjunct is the "Subsequent Injury Fund" law. Before this was instituted an employee who had previously lost a member of his body received, if he lost a second member, more compensation than usually paid, so that many employers would not hire a handicapped person for fear of having to pay extra compensation should the employee lose a second member. The employer now pays only the regular amount in such a case, and the extra compensation is provided by the "Subsequent Injury Fund." This will have a favorable influence on the re-employment of disabled veterans.

A new law becoming effective January 1, 1946, the Occupational Disease Disability Act, applies to employers covered by the Compensation Act, and will involve the Industrial Commission in the field of industrial disease, for it provides for compensation paid in case of total disability resulting from any one of 21 diseases of an occupational nature.

The inspectors of the Boiler Inspection Department make recommendations for repairs of boilers in various industries in the state to insure the safety of operation. The objective of the Factory Inspection Department is to improve working conditions and prevent accidents. The duties of the inspectors are to order safety measures pertaining to machinery, sanitation and lighting. The Child Labor

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Department prevents children, who are replacing men who have gone to war, working under conditions detrimental to their health and general welfare.

The Department of Safety and Accident Prevention is the one most closely associated with the problem of industrial hygiene and safety. Managed by a safety engineer who acts as director, it works with the Colorado Society of Safety Engineers in reaching workmen. The American Red Cross cooperates with the department, and the safety director is chairman of the First Aid Department of the Denver Chapter. The chairman supervises the activities of 500 first aid instructors and 300 accident prevention instructors in Denver. The Industrial Hygiene Division of the Board of Health has assisted the Industrial Commission in solving many difficult problems, such as performing various chemical analyses for them. The safety department employs many methods of fostering its program with the public. An annual safety meeting and first aid contest is held in August. A large library of movies is available for showing to any group without charge. Also, the department distributes safety posters to industrial companies of the state. A new department to tabulate safety statistics pertaining to accident records, types and severity of injuries, etc., is being set up by the Industrial Commission, and this information will be furnished upon request, without charge.

The compensation laws are gradually being liberalized and the safety program is growing. We are now safety conscious, and all departments are working in close cooperation. Let us hope that this trend will continue to the end that our workmen will have better health and that accidents will be reduced to a minimum.

Role of the Colorado Division of Public Health

AUGUST T. ROSSANO, JR.,
Director,
Division of Industrial Hygiene,
U. S. Public Health Service,
Colorado Division of Public Health,
Denver

THE legal responsibility of the Colorado Division of Public Health is far-reaching, as the State Health Department is empowered (1) to supervise and protect the health of the people of the state; (2) to make investigations into the causes of disease in order to preserve and improve public health; and (3) to promote education of the public in all matters pertaining to public health. The Division of Industrial Hygiene has been organized within the State Division of Public Health to investigate industrial health problems through studies of the working environment and its effect on health, and to act as a liaison between industry and the other branches of the State Health Department so that the complete public program can be brought to the plant as it is brought to the home and the school. In Colorado, the Division of Industrial Hygiene is directly under the administration of the State Health Officer and has the same status as any of the other divisions.

Industrial hygiene may be defined as the science of the preservation of the health of the working population, having as its primary objective a program for the prevention of occupational diseases, and, secondarily, a program of adult health and hygiene, including assistance in environmental problems. Since this state occupies an outstanding position in the national economy because of its various and extensive mineral resources, lead, molybdenum, vanadium, uranium, tungsten, gold and silver, to name a few of the some 40 odd minerals it produces, its smelters and refineries, a large steel plant and one very large rubber products manufacturing plant, its foundries and its machine shops, its numerous aircraft sub-assembly plants, and establishments producing ammunition—industrial hygiene is a problem of magnitude in Colorado. An effective program of industrial hygiene carried out in these industries can reduce the loss entailed by industry through employee illness and accidents by at least 30%. In large industries the responsibility for industrial health and safety can be assumed by the plant management itself, but in the smaller plants it becomes the responsibility of the state, since the plants have neither the personnel nor the funds to carry on their own industrial health programs.

The Colorado Division of Industrial Hygiene renders this service only if requested to do so, and all work is gratis. The engineer and chemist of this Division perform all the field and laboratory tests necessary to evaluate the working environment, and make engineering recommendations for the control of hazards. The nurs-

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ing consultant promotes nursing service in industry and assists the plant nurse in organizing her program and in keeping records. A physician from some other Division of the Health Department is consulted whenever medical advice is requested by the plant.

All information obtained is treated confidentially.

Activities of the Division during the last nine months fall into five categories: First, response to requests from industrial plants, labor groups, and the medical profession for evaluation of the industrial environment and recommendations for correcting detrimental conditions. Second, the most important phase of the work in the past, is assistance to official state, county and Federal agencies in preventing occupational diseases and improving working conditions. A program is now being initiated among a selected group of essential war plants in Colorado so that they may avail themselves of a complete accident and occupational disease prevention survey, in which assistance will be given in setting up and operating labor-management health and safety committees. The Division of Industrial Hygiene assists many agencies, among them the Colorado Mining Inspection Department, the Colorado Bureau of Mines, the U. S. Army, the War Manpower Commission and the War Production Board. Third, the Division offers consultant services to medical supervisors, private physicians, safety engineers and industrial nurses regarding the relative toxicity of materials and processes employed in industry. The requests for these services have been numerous. The fourth category is integration of the Division services with other official and non-official health agencies such as other Divisions of the state, county and city health departments. This Division cooperates also with the Division of Industrial Hygiene of the University of Colorado School of Medicine, and activities of these two divisions have been closely integrated which will result in the best possible coverage of industrial health problems in Colorado. It should be mentioned that the Colorado State Division of Industrial Hygiene has been closely connected with the Colorado Society of Safety Engineers, which in recent years has had no small part in stimulating interest in industrial and non-industrial accident prevention. The last category of activities has been industrial health education.

Numerous articles, pamphlets, posters, etc., have been prepared and distributed among management, labor and health groups, and talks have been delivered before various industrially connected groups.

The question of health education of the worker is one which has had little national attention and one which offers unlimited opportunities. It is hoped that in the future considerably more effort will be made in this direction.

Discussion

FRED R. INGRAM,
Chief, Division of Industrial Hygiene, University of Colorado School of Medicine and Hospitals, Denver

IT IS the purpose of this discussion to correlate the roles which have been reviewed by the previous speakers, into the whole industrial health program. One more phase of the program, however, the role of the private consultant, needs to be enlarged upon. So far as I know, there is only one organization in Colorado provided with the necessary trained personel and technical equipment to offer an over-all service to industry. These are several private engineering and medical groups which offer partial service, but the Division of Industrial Hygiene at the University of Colorado Medical School with its facilities is available for over-all consultant work on industrial health problems. The State Division of Industrial Hygiene, as indicated by CAPTAIN ROSSANO, through educational or other means, shows industry the need for improving the health of the workers and points out where hazards exist, recommending methods for control. But the private consultant is employed directly by industry and can maintain a continuing service, utilizing his facilities and time more extensively in the plant. It is the duty of industry to assume the re-

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sponsibility for the health of its workers, either as single plants or in groups, and it is not the function of the state to provide a service which is industry's responsibility. The role of the private consultant includes medical consultation, engineering service, aid in the design, installation, and operational check of any control system, and chemical services.

MR. ZARLENGO has stated that "compensation" formerly applied almost exclusively to accidents, except for the few instances of compensation for occupational diseases termed as accidents. The Occupational Disease Law, to become effective January 1, 1946, will insure that approximately 90% of all employees will have protection under the Act, since the Act covers a total of 21 occupational diseases. Silicosis is one of the most important coverages because of frequency in this state. Should an employee become totally disabled from silicosis, he would be eligible for compensation under the Act if disability occurred within two years from the date of his last injurious exposure while actually working for the employer against whom compensation is claimed, and if during the 10 years immediately preceding disablement he had been exposed to harmful quantities of silicon dioxide. He also must have been a resident of this state for at least five years. Actual compensation for silicosis is payable subject to the following limitations: If disablement occurs in the calendar month in which the Act becomes effective the total compensation will not exceed $500; if occurring in the next calendar month, it will not exceed $500, and thereafter will increase at the rate of $50 per month until the limit of $4,375 for benefits has been reached.

DR. SAMS emphasized that cooperation of all plant personnel is necessary for a smooth functioning industrial health and safety program, and it was pointed out that the primary function of the medical service is the prevention of injuries and the maintenance of employee health. In this statement may be read the great strides which industrial medicine has taken from the "finger wrapping" days of just a few years ago. The success of this program depends, in no small measure, on the cooperation of the plant safety engineer with the plant medical director. After the doctor has determined from his records which department has a high-accident rate, the safety engineer can take the proper steps to minimize these hazards. The results of the analyses performed by the industrial hygiene engineer, such as atmospheric analyses for their toxic constituents, must be determining factors in the physician's decision on the degree of exposure involved, and the resultant effect on the health of the employee. And this necessitates, too, a good working knowledge on the part of the plant physician of the various processes and equipment in his plant. DR. SAMS and MR. JONES have emphasized that there is a great need for being informed of the social, economic and administrative problems of the employees, as well as the industrial relations, employment methods, and causes for absenteeism and welfare problems. It is evident that industrial health is a much broader field than the protection against a specific work hazard.

Health Education in Industry

LOUIS W. SPOLYAR, M.D.,
Director,
Division of Industrial Hygiene

INDUSTRIAL workers have probably benefited least in the various adult health education campaigns of the past. Usually these are truly flash campaigns or publicity programs and as such merely satisfy the personal egos of some agency concerned for the agency interprets that action as so much work done by it and perhaps quietly says to itself, "I'm glad *that*

In *Monthly Bulletin*, Indiana State Board of Health, May, 1945.

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campaign is over." Needless to say this type of education doesn't sink in. It is a broad coverage, thin veneer type of program that looks pretty when the pleasantly colored veneer is intact. However, this superficial thin veneered crust soon shows that it has poor weathering qualities and presently between campaigns disintegrates. No one group can adequately execute or develop a durable worker education program. An adequate, workable and durable worker education program can be developed in any industrial area if the education activities are carried on among the local units of population. This development will require the combined resources of the Federal and state health agencies, official and nonofficial, labor organizations, management organizations and the medical safety and personnel services of industry.

The problem of worker health education is a large one. It involves personal contact with some 52 million workers. These workers are generally housed in small plants—plants employing less than 500 people. Lost time due to illness and accidents reflects a wage loss of about two billion dollars per year, and this does not take into account the interference with production schedules or the overhead cost of the employer through idle equipment. Thus it is quite apparent that it would be worth while for workers to receive health information if for no other reason than that it is good business. The health of the people is our country's greatest natural asset and likewise industry's efficiency is dependent upon the health of the workers.

In the decentralized health program where it will be necessary to enlist the *willingness* of the worker to learn various principles regarding health and then continue to perform them as a normal way of living, it will be necessary to delineate the functions of the various groups concerned.

Federal Responsibility

THE Federal government, through the Division of Industrial Hygiene of the U. S. Public Health Service, has attempted and should attempt to develop the decentralized health education program by promoting some of the following activities:

Set up demonstration health education centers in experimental industrial areas so that techniques may be developed that will reach the greatest number of workers for the dollar spent. Through these demonstration areas fundamental principles can be evolved that are directly useful to smaller units of population. This activity is actually being developed at this time by the Division of Industrial Hygiene of the U. S. Public Health Service.

Design materials to meet special requirements—special tools to be used on special jobs—such as posters, pamphlets, films, exhibits, radio script, lectures, etc. An outstanding example of this type of health education tool is the current Worker's Health Series already prepared by the U. S. Public Health Service.

Offer consultation services to State health agencies in setting up the health education program. It is fitting that the Federal government should do this, for effective education in any sphere requires first of all individuals with a specialized knowledge of the subject in order to develop and carry out the program. The Federal government through its various ramifications possesses these individuals.

State Board's Responsibility

HEALTH activities among industrial workers are carried on by states for one reason—to reduce the amount of preventable diseases in that segment of our population. This can best be done by routine studies of the job, by the use of the laboratory in order to determine the degree of atmospheric contamination and by health education. Health education is a potent tool to be used wisely in order to secure better cooperation of both labor and management in matters pertaining to health.

The industrial population is a fertile field for health promotion for it can be readily reached because that segment of our population is housed

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In addition to the plant, proper courses on industrial health should be offered in high schools and colleges in industrial centers in order to prepare the worker of tomorrow for his job or place in society.

How can health education be extended directly to the worker? Two methods suggest themselves: First, the State Health Department can carry its teaching directly to the worker by making plant visits, surveys, and speeches, and showing films and posters; second, the State Health Department can stimulate and organize if necessary intermediate organizations which in turn will carry the message to the individual worker.

The *direct* contact with workers by the state health departments is the usual method of operation today, but is one that has accomplished little. The reason is obvious. Stated bluntly it is "There's too many of them and not enough of us." Our present budget and staff permit no more than a hit and miss educational coverage. We merely tend to "sprinkle" a little information among all workers.

By using the same amount of energy in contacting intermediate local groups, it appears that more promise comes from distributing health information through this *indirect* method. As a state agency we can supply them with materials, ideas and information developed in part for us by the Federal government and then have them "carry the ball" on a local level. These local groups know the workers, management and other agencies interested in their problems. They can produce more per unit of time spent than can any centralized agency through the slow out-moded direct worker contact.

Employer's Responsibility

MANAGEMENT must understand that a workers' health education program within the plant is good business. Such a program will tend to reduce absenteeism due to illness, reduce accidents, increase the nutritional status of the workers, increase production and will instill on the part of the worker a willingness to use or wear protective equipment furnished him. Why? Because the worker through such educational activities will *understand* the whys and wherefores of the things that management may ask of him.

Subcommittees on health in the various labor management committees should be formed and fostered in all plants regardless of their size. Management should provide, or make it possible for these committees to acquire, the tools that are necessary in developing a health program, such as a health department, safety and occupational disease controls, posters, movies and pamphlets.

Further, management must realize that health education of the worker cannot be obtained by one lecture, one pamphlet, or a few posters. Years of effort and many thousands of dollars are required before this program will bear fruit.

Labor's Responsibility

LABOR must realize that all health activities are leveled at him so that he will stay healthy and thus stay on the job in order to produce goods that are essential to our civilian economy. Through a health education program developed in good faith, labor will *understand* the necessity of complying with various safety and health rules. By *understanding* he will be more observant and willing to cooperate.

Periodic medical examinations are potent health education tools. Men should submit to such examinations in order to determine their fitness to perform a task—safely for themselves and others associated with them.

Labor should cooperate with management in serving on health committees and thus from first hand experience call management's attention to health hazards or practices in his job or department. Obviously such suggestions should be followed up by management, else the worker will feel that he is merely "stuffing the suggestion box."

Thus all in all education of the worker is a decentralized activity where everyone has a direct responsibility in seeing that the worker gets the health information personally.

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